JUNE 22, 1959

STEEL
The Metalworking Weekly

A PENTON PUBLICATION

How a Steel Strike Will Affect America's Economic Recovery

Republic Scores in Direct Reduction

Nonferrous Strikes Threatening

Isothermal Heat Treat Approach Brings Savings, Boosts Quality

Scrap Handling—Problem or Profit?

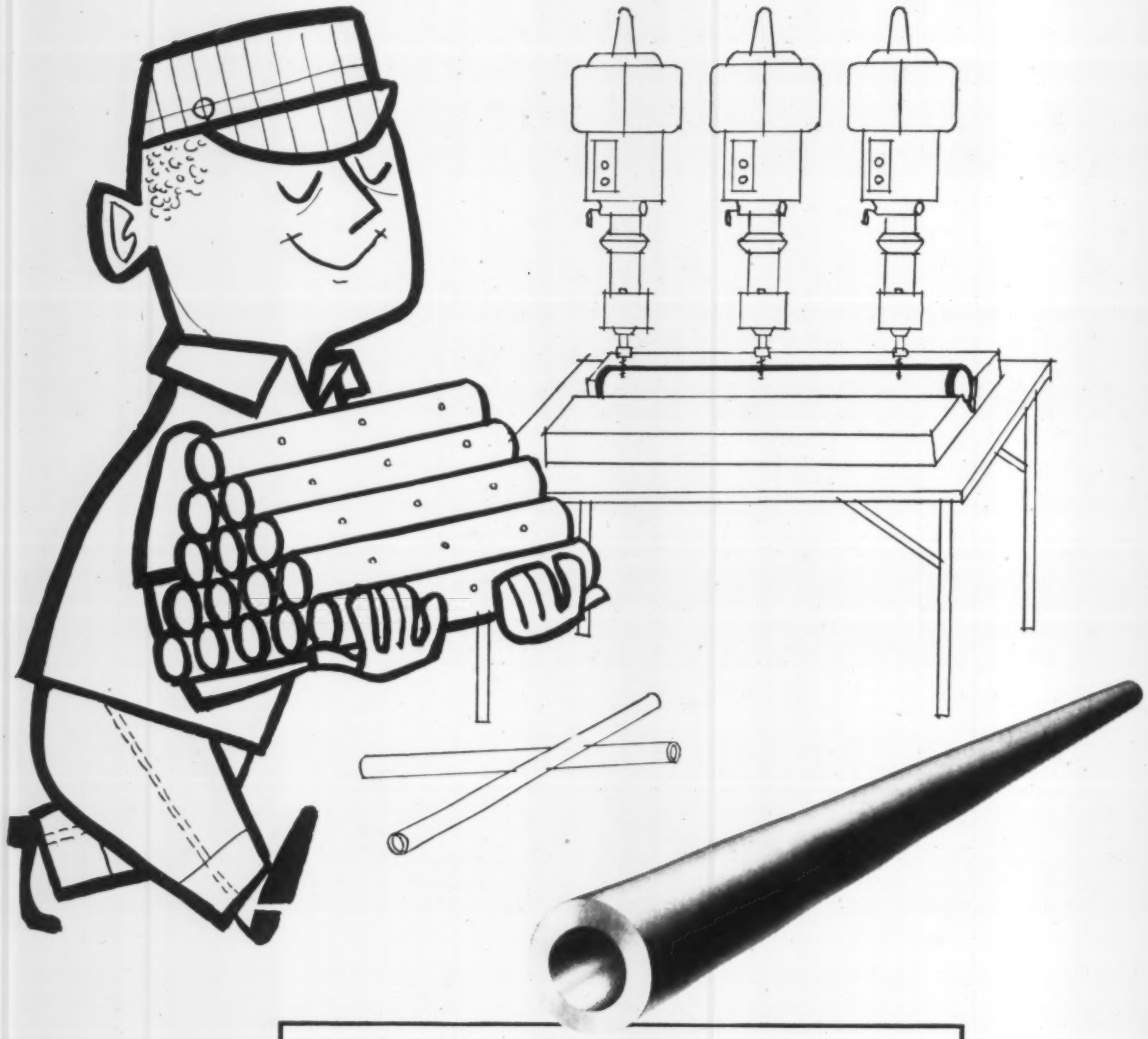
Extrusion Sales, Uses Increase

Ready for a Union?

Labor is struggling to organize more of metalworking's whitecollar workers as their ranks grow steadily. It's not having too much success yet, chiefly because the majority of them are more management oriented than union oriented. For tips on how to keep them that way, see Page 40.

COMPLETE CONTENTS
TURN PAGE

METALWORKING OUTLOOK
PAGE 29



How B&W JOB-MATCHED TUBES cut Fabricating costs to the bone

With B&W Job-Matched Tubing for mechanical applications you get:

- . . . the right choice from a wide range of analyses, sizes, tempers, and finishes to exactly meet fabricating requirements
- . . . consistently uniform wall thickness, diameter, and concentricity to simplify fabrication
- . . . quality control which assures uniform properties and characteristics in every tube

Whatever your requirements, B&W Job-Matched Tubes can help keep your fabricating costs down.

For complete information about B&W Job-Matched Mechanical Tubing call the local B&W District Sales Office or write for Bulletin TB-352. The Babcock & Wilcox Company, Tubular Products Division, Beaver Falls, Pennsylvania.

B&W

THE BABCOCK & WILCOX COMPANY

TUBULAR PRODUCTS DIVISION

TA-9005-G2

Seamless and welded tubular products, solid extrusions, seamless welding fittings and forged steel flanges—in carbon, alloy and stainless steels and special metals

This Week in STEEL

The Metalworking Weekly

June 22, 1959 Vol. 144—No. 25

Metalworking Outlook, p. 29

The Editor's View—Labor Needs Controls Too 35
▶ How a Steel Strike Will Affect America's Economic Recovery .. 37
Steel Talks Make Little Headway—Strike deadline close 38
Depreciation Reform in 1960?—No chance for action in '59 .. 39
Purchasing Agent President Hits Commercial Bribery 39
▶ Labor Unions Struggle to Organize Whitecollar Workers 40
Most Engineers Oppose Unions—They're management oriented 42
National Wins Dunes Battle—Will build Indiana steel plant .. 43
▶ Republic Steel Scores in Direct Reduction Research 44
Scale Orders Gain Weight—Automation seen boon to makers .. 49
▶ Strikes Threaten Nonferrous Market—27 pacts expire June 30 .. 52
Sheffield Opens Rod Mill—It's at Kansas City (Mo.) Works .. 69

Technical Outlook, p. 85

▶ Isothermal Heat Treating Approach Wins Savings 86
Three Men Score Breakthrough for Vapor Deposition 88
Sleeve Guards Thermocouple Against Thermal Shock 89
Optics Slash Machine Alignment Time—Other benefits cited.. 90
Stainless Steel Honeycombs Are Brazed in a Blanket 91
Cobalt 60 Carrier Is Controlled from a Safe Area 92
Progress in Steelmaking—Big Levelers Make Plates Flat 94
Pallet Transporter Trims Manhour Costs—It's semiautomatic .. 97
▶ Scrap Handling—Problem or Profit?—Mechanization grows .. 98
Machine Welds 100 ft Girder in 8 Hours; Same Job Used to Take 60 Hours—A production bottleneck is shattered 100

Market Outlook, p. 119

Complete Index to Market News and Prices 119
▶ Extrusion Sales Up, Uses Increase—Architecture is leader 121
Imported Steel Advancing in Southwest Market 124
Steelworks operation chart and district ingot rates 128
May Steel Production Is Greatest for Any Month 128
Scrap Displays Signs of Strength—Composite rises $1 140
Nonferrous Metals—Lead, Zinc Aided by Quotas 144

▶ Listed on cover.

WHERE TO FIND

Metalworking Pulse ..Turn page
Reader Service Center 5
Calendar of Meetings 10
Editorial & Business Staffs 16
Windows of Washington . 46
Mirrors of Motordom 55
The Business Trend 59
Men of Industry 63
Obituaries 66
New Products 105
New Literature 116
Advertising Index 149

Index available semiannually.

STEEL is also indexed by Engineering Index, 29 W. 39th St., New York 18, N. Y.

STEEL, the metalworking weekly, is selectively distributed without charge to qualified management personnel with administrative, production, engineering, or purchasing functions in U. S. metalworking plants employing 20 or more. Those unable to qualify, or those wishing home delivered copies, may purchase copies at these rates: U. S. and possessions and Canada, $10 a year; all other countries, $20 a year; single copies, 50 cents. Metalworking Yearbook issue, $2. Published every Monday and copyright 1959 by The Penton Publishing Co., Penton Bldg., Cleveland 13, Ohio. Accepted as controlled circulation publication at Cleveland, Ohio.

Metalworking Pulse ▶

TURN

Metalworking Pulse

INDUSTRIAL PRODUCTION INDEX

	WEEK ENDED JUNE 13	PREVIOUS WEEK	MONTH AGO	YEAR AGO
(1947-49=100) Based on steel output, electric power output, freight carloadings, auto assemblies	174*	172	170	139

*Preliminary.

Three of the four components in STEEL's index advanced in the latest period to establish a new record. Only steel production declined as producers prepared for a possible strike.

Details on Page 59

U. S. PASSENGER CAR PRODUCTION

	WEEK ENDED JUNE 20	PREVIOUS WEEK	MONTH AGO	YEAR AGO
Number of units assembled ..... (Source: Ward's Automotive Reports.)	130,000*	127,543†	133,568	84,396

*Estimated. †Preliminary.

Auto producers are edging back up to their 1959 high point after dropping off the pace two weeks in succession because of slowdowns for Memorial Day and inventory adjustments.

Details on Page 56

NATIONAL STEEL INGOT PRODUCTION

	WEEK ENDED JUNE 21	PREVIOUS WEEK	MONTH AGO	YEAR AGO
Net tons (thousands) (AISI)	2,631*	2,604	2,644	1,751
Index (1947-49=100) (AISI)	163.8*	162.1	164.6	109.1
Percentage of capacity (STEEL)	92.5*	94.0	95.5	64.5

*Estimated.

Operating at 92.5 per cent of capacity, mills turned out 11.6 million tons of ingots and steel for castings in May. This is a record monthly tonnage and brings the total for the first five months to about 53,370,000 tons.

Details on Page 128

STEEL SCRAP PRICE COMPOSITE

	JUNE 17	WEEK AGO	MONTH AGO	YEAR AGO
Based on No. 1 heavy melting grade at Pittsburgh	$36.50	$35.50	$33.33	$35.00

STEEL's composite on No. 1 heavy melting steel rose $1 a ton last week to $36.50. This was the fourth consecutive weekly advance and lifted the market to the highest level since March. Mills have started to cut off shipments in anticipation of a strike.

Details on Page 140

FINISHED STEEL PRICE INDEX

	JUNE 16	WEEK AGO	MONTH AGO	YEAR AGO
Based on Bureau of Labor Statistics data (1947-49=100)	186.7	186.7	186.7	181.5

The domestic market has been strengthened by a steady rise in quotations on imported material. The advance has amounted to as much as $17 a ton since February. Foreign competition remains a serious problem.

Details on Page 129

How Drop Forgings Cured the Customer's Trouble

Disturbing reports from the field convinced a large manufacturer that something was wrong with the pinion gears he was making. Expensive machinery built in his plants was giving trouble—all because of those pinions. A research engineer quickly spotted the cause: the pinion gears were not of the forged type, and lacked the stamina for heavy-duty work.

"Get drop-forged pinions," he advised. "Try Bethlehem. They know how to make a good gear blank."

His boss accepted the recommendation. Bethlehem got a trial order—then a second, then a third. Now it's no longer on a trial basis. Bethlehem drop-forges the blanks whenever a new lot is needed.

The customer? He's mighty well pleased. His pinion-gear troubles have disappeared.

We suggest you call on Bethlehem for any job that can be handled by drop-forging methods. We are equipped to produce an infinite number of designs, in weights ranging from 1 to 250 lb.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

"Task-Forged" savings shape up in all sizes!

They're all different in size, shape, requirements, application. Yet all of these typical component parts "Task-Forged" by COMMERCIAL have one common denominator—important savings in metal and machining.

Unusual shapes involving multiple upsetting, through-pierced holes, eccentric displacement of metal for its more economical use, customized tolerances? They're only part of the big savings story.

Many of the jobs shown here were little more than "ideas" when customers first came to COMMERCIAL for assistance. COMMERCIAL'S "Task-Forging" team analyzed the "ideas"... recommended design changes to effect greater economies in production... performance tested early working models... and finally produced the components as stronger, consistently sound upset forgings.

And whatever the size of the component or the final application involved—from 80-pound ball-joint housings to stub ends weighing less than 39 ounces, or in applications ranging from construction equipment to military missiles—it's the same story. Every day "Task-Forging" is successfully meeting the challenge of unusual shapes.

Whether you're planning a new product or want to improve on the forming of a part in an established product, perhaps COMMERCIAL'S "Task-Forging" service—backed by over 30 years of metal forming experience and specialized equipment which includes 1½" thru 8" upsetters—may be able to help you. Address: Commercial Shearing & Stamping Company, Dept. L-26, Youngstown 1, Ohio.

COMMERCIAL
shearing & stamping

SPECIALISTS IN THE SHAPE OF THINGS TO COME

SANDVIK

Keeps A *Scientific* Eye On

SPRING STEEL QUALITY

Control of steel purity. The SANDVIK laboratories carry out more than 200,000 chemical analyses a year.

Research microscope for up to 2,000X enlargements. This microscope is also used for the study of structures, control of heat treatments, macrophotography etc.

At Sandvik, the latest scientific research and quality control techniques constantly improve and protect spring steel quality.

This is part of the reason why Sandvik steels have the special physical stamina to give consistent performance in such critical applications as flapper valves, instrument springs, shock absorbers, surgical instruments, unbreakable watch mainsprings, piston ring segments and expanders, etc.

Sandvik stocks a wide variety of grades and sizes of cold rolled specialty strip steels. For information on leading types, send for this free brochure.

SANDVIK STEEL, INC.

1702 Nevins Road, Fair Lawn, N. J.
SWarthmore 7-6200 • N.Y.C. ALgonquin 5-2200
Branch Offices:
Cleveland • Detroit • Chicago • Los Angeles
SANDVIK CANADIAN LTD.
P.O. Drawer 1335, Sta. O. Montreal 9, P. Q.
Works: Sandviken, Sweden

SPRING STEEL

SPRINGS

CORONANT CARBIDE TOOLS

STEEL BELT CONVEYORS

HAND SAWS & TOOLS

SS-191

Held down "impossible" job for months vs. days

They were asking the "impossible" at this big West Coast mine. The hose used in their big beneficiation plant must be tough enough to handle the flow of murderously abrasive iron-ore slurry. Yet it still must be flexible enough to follow a twisting, bending course down from the top of the seven-story structure.

So it's little wonder their first hose sprang numerous leaks almost immediately – was finished completely in about 45 days. It wasn't until the G.T.M. – Goodyear Technical Man – recommended his special ore-carrying hose that they got satisfactory service.

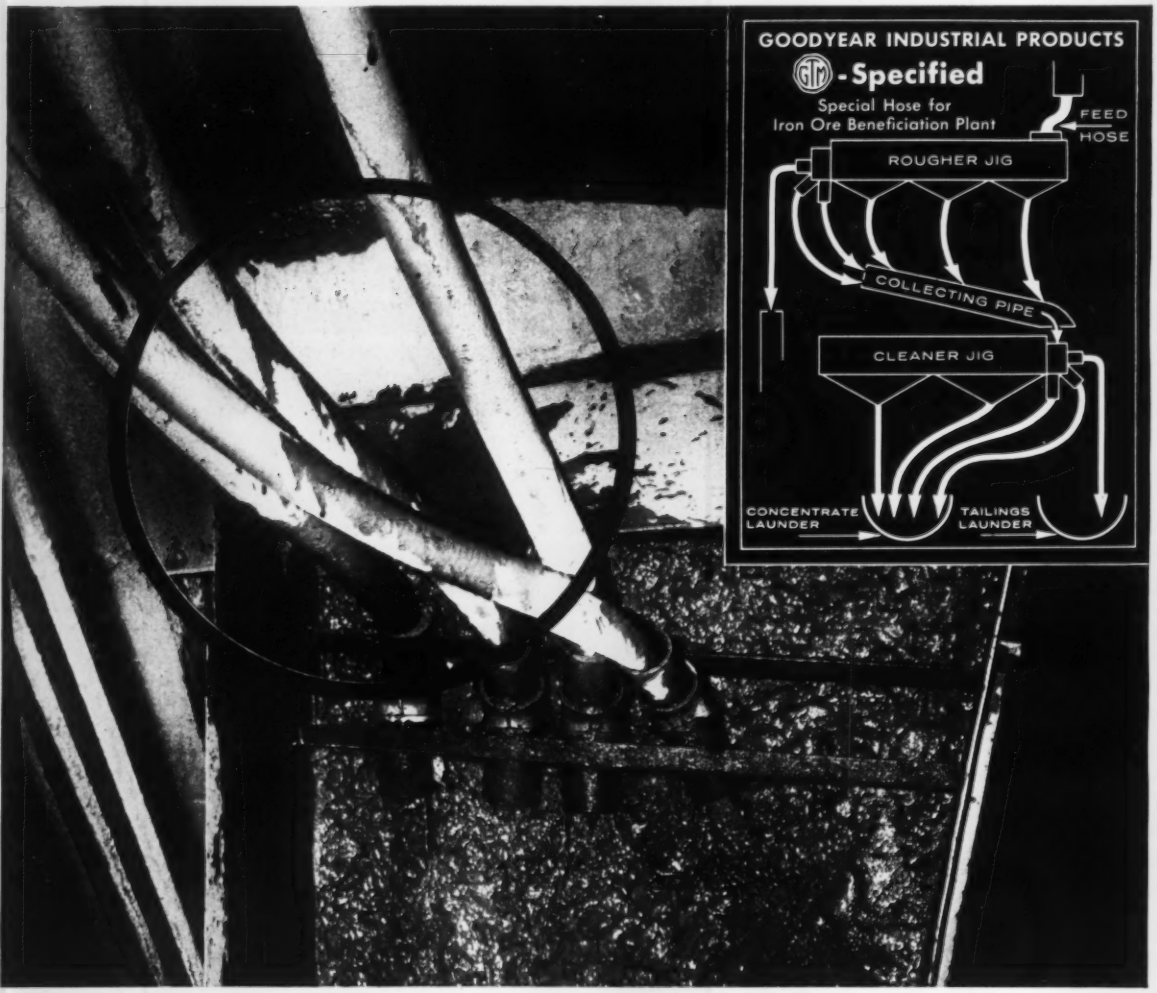
In fact, the G.T.M.'s hose has been so successful that the company's purchased over 4,000 feet of it to date.

It's been on the job over 12 months now – completely mastering this extra-tough job.

So once again, the G.T.M. has proved that the "impossible" often boils down to right hose – and the right recommendation. Make sure you get both–by contacting your Goodyear Distributor – or writing Goodyear, Industrial Products Division, Akron 16, Ohio.

• • •

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on V-Belts, Hose, Flat Belts and many other industrial rubber and non-rubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*



HOSE FOR ALL INDUSTRY BY

GOODYEAR

THE GREATEST NAME IN RUBBER

No Tickee . . .

中國鋼鉄工業

We have a student of oriental languages at The Penton Publishing Co.: Andy Bugosh, promotion manager for one of our sister publications, *New Equipment Digest*. He learned Japanese during World War II. Tom Bryan, one of STEEL's art editors, recalled that rare talent when it came time to illustrate last week's story, "Steel Boom in China: It's Ominous."

Andy told Tom that the characters in the Japanese alphabet are based on Chinese and that he could prepare some hand lettered characters that would lend an oriental air to the story.

Tom liked the authentic appearance of Andy's Chinese lettering, but his occidental curiosity began to gnaw away at him: "Did those intricate patterns read 'China's Steel Industry,' or had Andy used a sable brush to tickle some of our readers and play a huge calligraphic joke by whimsically stroking in something like: 'Though it isn't Easter, let's have an egg roll'?"

Tom checked (as in Chiang Kai) a Chinese dictionary (8 in. thick) and found that there were about 15,000 highly symbolic characters in the Chinese alphabet. Result: More faith in his fellowman and a good layout.

Shine Up Your Crystal Ball

Our friend, the swami, is scanning the crystal ball to see if there's a car in his future. If you enter STEEL's "Beat-the-Experts" contest, there's a good chance that you have a car in yours—a 1/10 scale model of General Motors' gas turbine powered Firebird III, made expressly by GM for this contest. Ten runners-up will receive full color prints of a dream car rendered by George W. Walker, Ford vice president and director of styling.

Check the Pulse

Some Detroit handicappers say this should be a 5.5 million car year and others bracket that figure. You don't really need a crystal ball to come up with a number. For a good check on how automobile production is going, see the Metalworking Pulse, inside the front cover. Estimate the number of cars that will be produced in the U. S. during 1959 and submit a coupon by June 30.

We Get Letters

In our introductory column, we invited you to air your problems, voice complaints, interpret trends and events, or indulge in some do-it-yourself editorializing. We also noted that this was the place to send in questions and get answers.

Here's a two part letter, from Kenyon D. Love, vice president of Colonial Foundry Co., Louisville, Ohio, that takes up our invitation:

"We first thought you ought to call your new department 'Questions and Answers' but when reading further we learned it was for more than that and we came up with 'Readers' Writings.'

"Whatever you call it—even 'Writing Readers,' we think the name ought to say just what the department is. Many are named so badly that you skip them month after month until sometime, just by accident, you happen to read a little and then find out what you've been missing. Then you could kick yourself, but it's too late. There isn't time to go back and read the old copies—even if you had them."

Still Time to Enter

Your admonition is duly noted and recorded, Reader Love. We'll judge any names suggested if they're mailed by midnight, June 23. The reader who submits the best name will be STEEL's Honorary Editor No. 1. Now to the problem part of Reader Love's letter:

"We are trying to do some highly theoretical work instead of the usual applications research in our spare (?) time. We need the use of some physics equipment, perhaps a university's . . . spectroscopes, interferometers, x-ray diffraction equipment and the like. We can't afford to buy them and likely not even to rent them. Nevertheless, we have something revolutionary—we think—and we want an opportunity to prove we can knock down our strawman. Having studied all the literature, the time has come to

---

I believe _____ automobiles will be produced in the U. S. from Jan. 1 through Dec. 31, 1959.

Mail this to:
Ed Service
Beat-the-Experts
STEEL
Penton Bldg.
Cleveland 13, Ohio

PRINT NAME _____
POSITION _____
COMPANY _____
ADDRESS _____
CITY _____
STATE _____

Introducing...
METALOK MORTAR

WALSH'S ANSWER TO THE PROBLEM OF JOINT EROSION IN LADLES AND FIREBRICK FURNACE LININGS

Shipped in 100 lb. bags ready for mixing

Used in laying up Walsh Ladle brick, Metalok successfully retards penetration of metal and slag... reduces joint erosion to the barest minimum — definitely increases ladle lining life.

For greater satisfaction and improved service in slab, reheat and other metallurgical furnaces, get acquainted with new Metalok. A trial will convince you. Write today for the complete money-saving story.

Specialists in Refractories of High Bulk Density and Low Porosity

WALSH REFRACTORIES CORPORATION
101 FERRY ST. · ST. LOUIS 7, MO.
FOR OVER 60 YEARS MANUFACTURERS OF HIGH GRADE REFRACTORIES

try the experiments. For example, we want to compare a Balmer series through a pinhole with the same through a slit; also removing the atmosphere and then the heat as well from the environment used for projections. What should we do?"

Reader Love has opened a wide field for discussion. We phoned him to talk over some of the aspects mentioned in his letter. He has compiled three volumes of notes on the Balmer series, and believes that he's on the verge of something that will affect a basic law of physics. He knows that what he seeks involves using a tremendous amount of extremely sensitive equipment and that perhaps only the U. S. government could underwrite the project.

What's Your Solution?

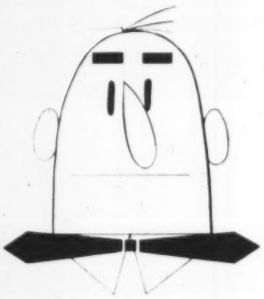
His point: If industry is to advance, why don't foundrymen, for example, share instruments and knowhow to study the more academic aspects of their technology? Colleges receive many industrial grants in aid which enable students to pursue applied work. Why not more for the theoretical? How do we get scientists, and more importantly, schools with their vast arrays of equipment, interested in theoretical studies?

We think Reader Love has opened the question suitably. Any comments from the floor?

Aluminum Story Moves

Though our reprint department has been besieged with requests, we still have copies of the 16 page Trends in Metals report, "Aluminum's on the Move." If you'd like a copy, write: Editorial Service, STEEL, Penton Bldg., Cleveland 13, Ohio.

Semaphore and Sem-against



This week, the bow tie on this fellow, whom we call Mr. Metalworking Manager, is standing straight out in a steady east-west wind. Next week, his tie will be whipping around like the arms of a semaphore signalman who has sighted an enemy task force. He's the guy who'll indicate the reactions of 6200 general managers of metalworking plants who were surveyed for STEEL's midyear forecast of the economic weather. One thing Associate Editor George Howick let drop in advance: "The second half of 1959 vs. the first half will have a higher dollar volume of sales, say 56.5 per cent of the respondents. Only 12.6 per cent see a decrease."

For other items about costs, prices, employment, and profits see next week's STEEL.

"Been workin' her hard for 14 years ...she's as fast and accurate as the day she arrived"

NIAGARA SHEARS

Precision made Niagara Shears are built to cut with micrometer accuracy . . . *and to keep cutting that way.*

Thousands are in use, but comments are nearly identical. Makes no difference how hard they're worked. Three shifts a day, month after month, year after year . . . a Niagara Shear *continues* to be accurate.

"Don't have to change knife clearance"

No adjustments needed for cutting different thicknesses of stock . . . even at the same time . . . with consistently accurate, burr-free results. *And much longer knife life!* The secret is in the rigidity of Niagara's exclusive box section design. "Upped production 25%," says one user, "because we have fewer adjustments to make."

"Costs less to operate"

There's less to do, less to learn and less to go wrong. Never even have to worry about damaging the machine by forgetting to change the knife clearance. Once set, Niagara Shears need no further adjustment. "Been using Niagara's for 10 years . . . never had downtime for repairs or maintenance," says another user. Even after long, hard use when it becomes necessary to turn the blades or change knives, it's a very easy matter. Nothing like Niagara Shears for simplicity.

FACT BOOK FOR YOU

Bulletin 69 is filled with customer reports on Niagara Shear performance. You'll value it. Write today.

NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, N. Y. *District Offices and Distributors in Principal Cities*

Concrete reinforcing specialties, shown above, were fabricated from Republic's Manufacturers' Coarse Wire by Superior Concrete Accessories, Inc., Franklin Park, Illinois.

Some Concrete Facts About

REPUBLIC STEEL WIRE

Annually, Republic supplies large tonnages of manufacturers' coarse wire in a variety of gages to fabricators of concrete reinforcing specialties.

Wire artisans twist, bend, and weld the wire in hundreds of specialty items, such as screed chairs, coil loops, snap ties, pick-up inserts, coil ties.

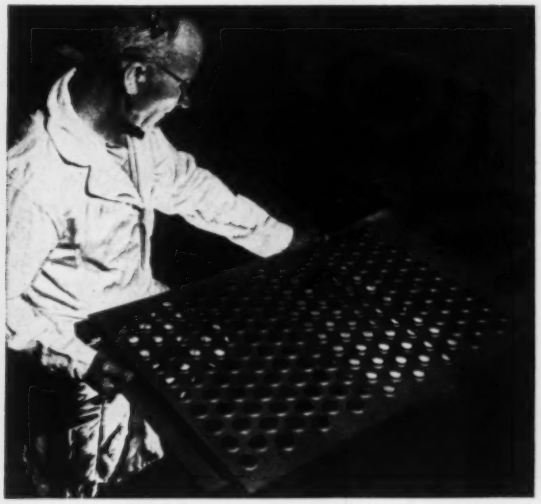
These reinforcing products are vitally important to contractors and builders working with concrete and masonry construction. Yield and tensile strength must be just right. The wire products must be capable of carrying specific loads. Equally important to producers of reinforcing specialties, is the quality and formability of the wire.

The uniform quality of Republic Steel Wire assures accurate, easy forming with adequate strength and toughness to meet the most difficult design and forming problems.

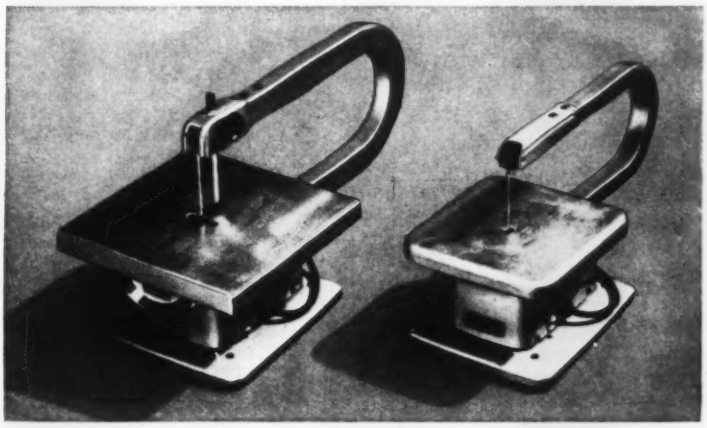
Republic Wire is made by specialists using the most up-to-date equipment and methods. Skilled laboratory control and careful inspection assure every purchaser of Republic Steel Wire that it will meet and suit his specific requirement.

To these advantages, add the fact that for whatever type of wire you require, Republic Wire Metallurgists are always available to work with your personnel in solving production problems . . . are available to assist in selection, application, and processing of the right wire for the job. The coupon is your invitation to use this obligation-free service.

CASTING FACTS ABOUT REPUBLIC CHATEAUGAY PIG IRON as the ideal base metal for ductile iron. Chateaugay's high total carbon and unusually low phosphorus, silicon, and manganese content suit it perfectly for ductile iron use. Inherently excellent physical properties are maintained in the ductile form assuring strong, flaw-free castings accurate to patterns and shapes. Castings machine easily and economically. Republic offers you the services of its famed 3-D Metallurgical Teams—field, mill, and laboratory metallurgists—to assist in solving foundry production and metallurgical problems. Send coupon for more information.



FABRICATING FACTS ABOUT REPUBLIC GALVANNEALED SHEETS. The tight, uniform zinc coating takes all ordinary forming operations. Shear, blank, pierce, form, flange, solder, deep draw, or bead with ease. Kathabar Division, Surface Combustion Company, uses Republic Galvannealed Sheets to obtain economy and corrosion-resistance in making humidifying and dehumidifying units. In this application, Republic Galvannealed Sheets eliminate the problem of rust arising from condensed moisture. Want more facts? Mail the coupon today.



SAVINGS FACTS ABOUT REPUBLIC ELECTRUNITE MECHANICAL TUBING. By using ELECTRUNITE® Mechanical Tubing in the manufacture of jigsaws, Syncro Corporation saved time, materials, and costs on production of the blade-yoke. Square tubing was recommended for one model, rectangular tubing for the other. Results: reduction in weight of the blade-yoke, improved product appearance, savings in time, materials, assembly, and shipping costs. Contact your Republic representative, or mail coupon for more facts on ELECTRUNITE.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. ST-7935
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Send more information on:

☐ Manufacturers' Wire ☐ Chateaugay Pig Iron
☐ ELECTRUNITE Mechanical Tubing ☐ Galvannealed Sheets

Have a metallurgist call: ☐ Wire ☐ Pig Iron

Name_____ Title_____

Company_____

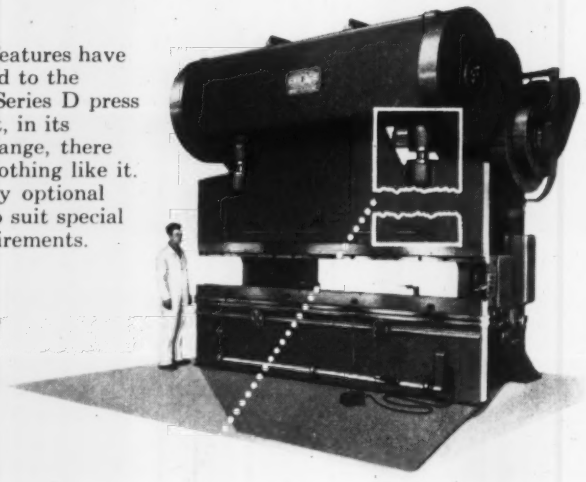
Address_____

City_____ Zone____ State_____

IN FEATURE
AFTER FEATURE

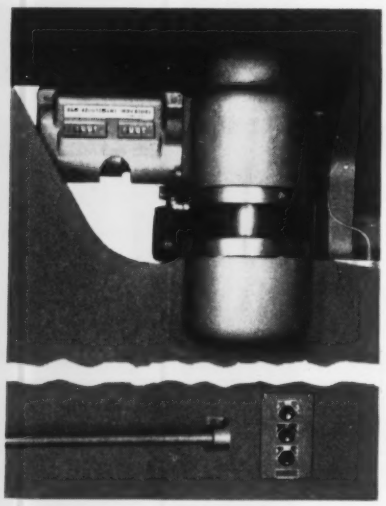
there's nothing like it

So many features have been added to the CHICAGO Series D press brake that, in its capacity range, there really is nothing like it. Also, many optional features to suit special work requirements.



features for

Operating Conveniences to Save Time and Money
Unexcelled Accuracy
Quiet, Smooth Running
Operator's Safety and Machine Protection
Superior Production Performance



Here's one of the operating conveniences: the ram adjustment control with OPEN-UP-DOWN push-button station (110-volt operation) and the counter-type indicators for left and right-hand adjustment screws close together in convenient view of operator. Think of the effort and set-up time saved with this exclusive adjustment control.

The advanced design CHICAGO Series D press brakes are described in bulletin D-59. Ask for a copy.

9087

A Tradition of Quality and Value since 1899

Press Brakes • Press Brake Dies
Straight-Side-Type Presses
Hand and Power Bending Brakes
Special Metal-Forming Machines

CHICAGO DREIS & KRUMP

DREIS & KRUMP MANUFACTURING CO.
7458 S. Loomis Blvd., Chicago 36, Illinois

CALENDAR OF MEETINGS

June 22-23, Powder Metallurgy Parts Manufacturers Association: Membership and directors meeting, Skytop Lodge, Pocono Mountains, Pa. Information: Hanson & Shea Inc., 1 Gateway Center, Pittsburgh 22, Pa.

June 22-26, Air Pollution Control Association: Annual meeting, Hotel Statler-Hilton, Los Angeles, Calif. Association's address: 4400 Fifth Ave., Pittsburgh 13, Pa. Executive secretary: Harry M. Pier.

June 22-26, American Society for Testing Materials: Annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. Society's address: 1916 Race St., Philadelphia 3, Pa. Executive secretary: Robert J. Painter.

July 13-15, Truck-Trailer Manufacturers Association: Semiannual meeting, Homestead Hotel, Hot Springs, Va. Association's address: 710 Albee Bldg., Washington 5, D. C. Executive manager: John B. Hulse.

July 29-Aug. 1, National Tool & Die Manufacturers Association. Summer board meeting, Grand Hotel, Mackinac Island, Mich. Association's address: 907 Public Square Bldg., Cleveland, Ohio. Executive vice president: George S. Eaton.

Aug. 10-13, Society of Automotive Engineers: National west coast meeting, Hotel Georgia, Vancouver, B. C. Society's address: 485 Lexington Ave., New York 17, N. Y. Secretary: John A. C. Warner.

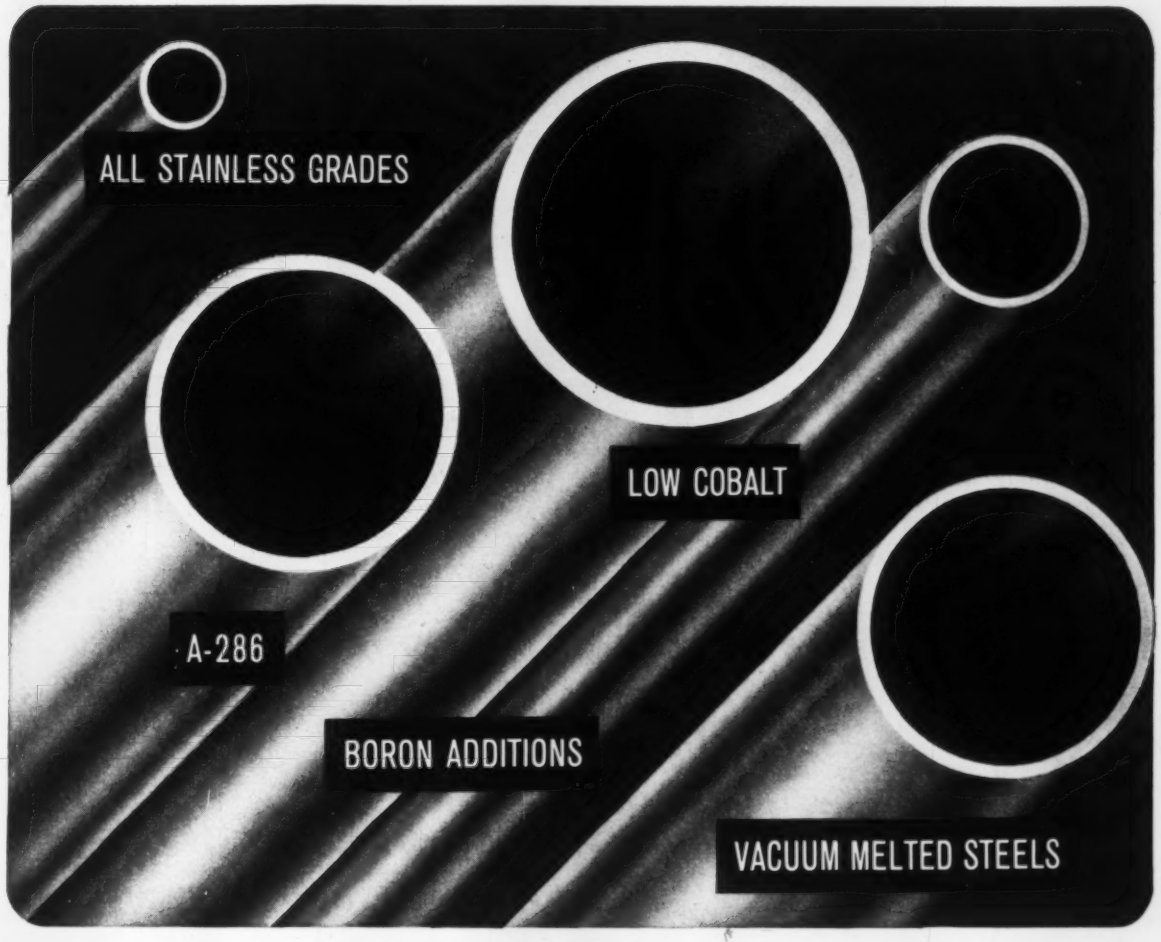
Aug. 18-21, Western Electronic Show and Convention: Cow Palace, San Francisco. Information: WESCON, 1435 S. La Cienega Blvd., Los Angeles 35, Calif.

Aug. 19-20, National Screw Machine Products Association: Sales conference, Wade Park Manor Hotel, Cleveland. Association's address: 2860 E. 130th St., Cleveland 20, Ohio. Executive vice president: Orrin B. Werntz.

Aug. 31-Sept. 2, Metallurgical Society of AIME: Institute of Metals Division's conference on semiconductors, Statler-Hilton Hotel, Boston. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: R. W. Shearman.

Sept. 13-18, American Chemical Society: Fall meeting, Convention Hall, Atlantic City, N. J. Society's address: 1155 16th St. N. W., Washington 6, D. C. Executive secretary: Alden H. Emery.

Experience — *the added alloy in* ***Allegheny Stainless***



What are your needs in Seamless Tubing?

A-L offers widest range of materials and large diameters with walls as thin as .032".

Here is the widest range in materials in stainless seamless tubing available anywhere to meet your exact requirements and solve high-temperature or corrosion problems and save you money.

Allegheny Ludlum makes seamless tubing in all stainless grades including 309, 317, 318, 310, 416 and 446—normally difficult to obtain. Also available in high-strength alloys such as A-286, in vacuum melted steels, and in custom analyses grades such as low cobalt with .01 or .05 max. and small boron additions to standard types.

A-L also makes composite tubes with bonded combinations of carbon and stainless and other metals for special chlorine-corrosion applications in process equipment.

Allegheny Ludlum Stainless Tubing ranges from 3/16" OD to 3½" OD with wall thickness ranging from .013" to .375"—typical of the sizes that A-L can produce. For certain applications, .500" walls are possible. Some standard sizes in stock are 2½" OD—.032" walls, 3" OD—.042" walls and 3½" OD—.042" walls and 3½" OD—.058" walls. All sizes with true circularity, no dents or handling marks.

A-L Tubing is also available in small quantity orders, in random or cut lengths. Standard grades and sizes in stock throughout the country. Call your nearest A-L representative for all the help you need.

Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa. Address Dept. S-181.

NEW! FREE—Write for your copy of Allegheny Ludlum Stainless Tubing—32-pages of technical data, grades and suggested applications.

WSW 7929

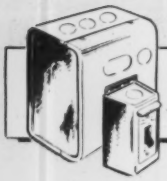
ALLEGHENY LUDLUM

for warehouse delivery of Allegheny Stainless, call RYERSON

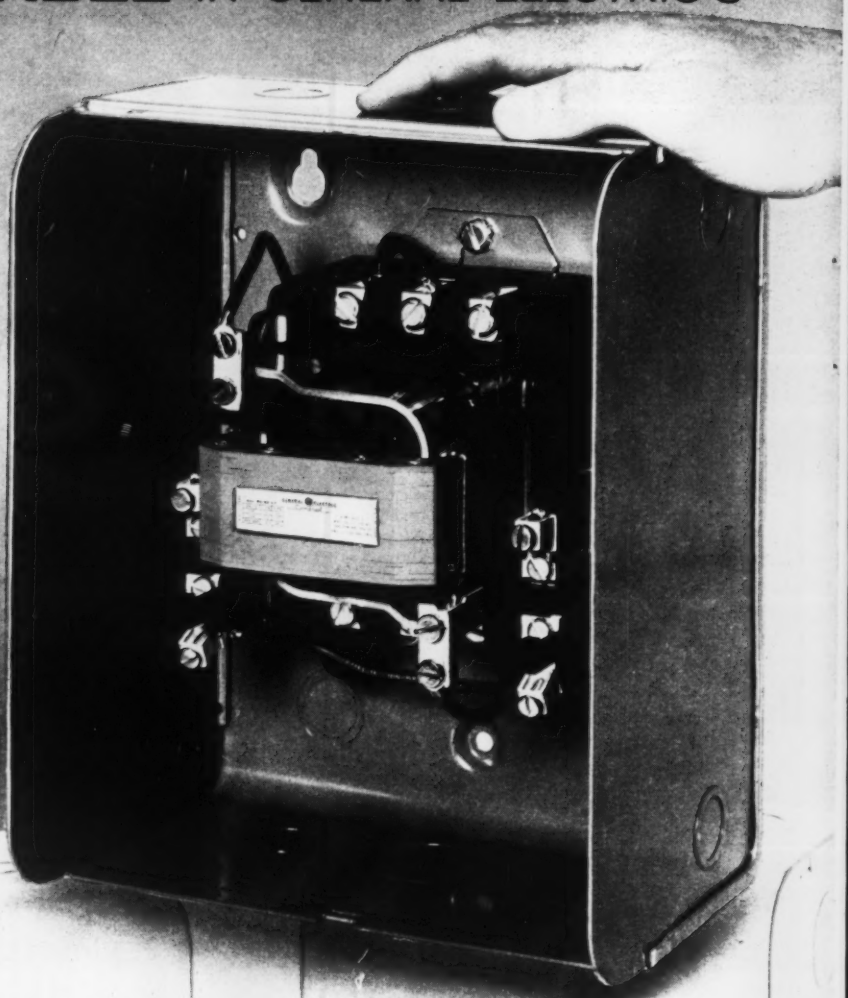
Export distribution: AIRCO INTERNATIONAL

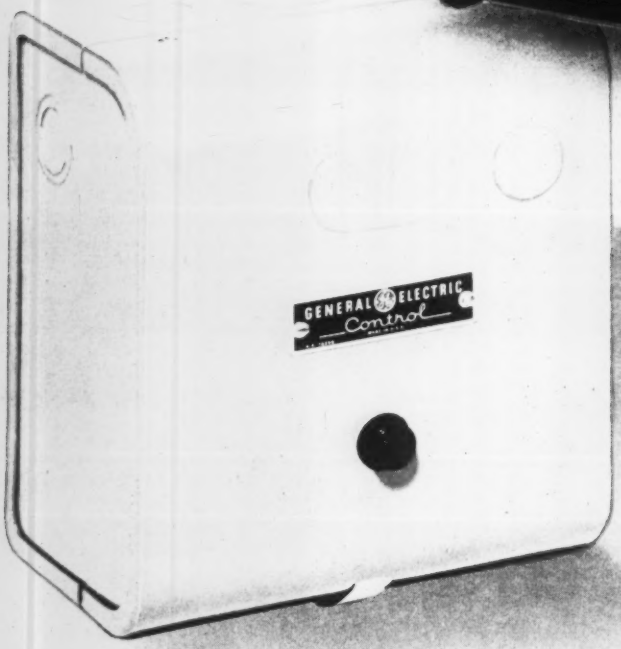
EVERY FORM OF STAINLESS . . . EVERY HELP IN USING IT

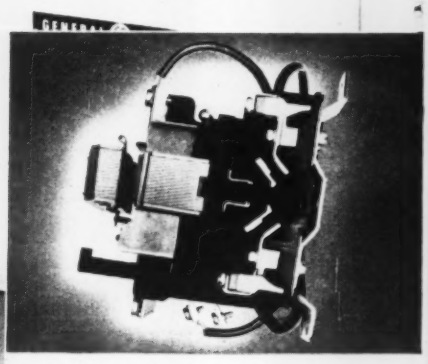
NOW AVAILABLE IN GENERAL ELECTRIC'S



100 LINE







WEDGE-ACTION DESIGN (see cross-section cutaway) gives positive "make." A quick, clean "break" is assured by spring-loaded contacts and a low-stress "kick-off" spring.

FIELD-PROVED 100-LINE DESIGN . . .

NEW SIZE 2 MAGNETIC STARTER

General Electric now offers a Size 2 magnetic starter that is 34% smaller than previous open forms, and includes all the field-proved features of General Electric's 100-Line. You get better performance, less maintenance and greater dependability because:

WEDGE-ACTION CONTACTS provide more positive "make". Reduced armature mass and spring-loaded contacts practically eliminate bounce. Contact springs and a special "kick-off" spring provide positive "break". Vertical contacts shrug off dirt and dust.

NEW ARC TRAP DESIGN actually attracts arcs away from contacts and dissipates them harmlessly to prolong contact life.

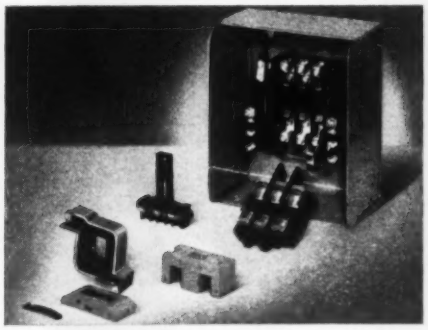
SNAP-SLIDE CONSTRUCTION makes possible complete disassembly of the starter in 20 seconds. Contacts can be removed and inspected in ten seconds.

STRAIGHT-THROUGH WIRING means no wires need be bent or looped, and all wiring is done from the front. Pressure-type terminals and 10% more wiring room speed installation.

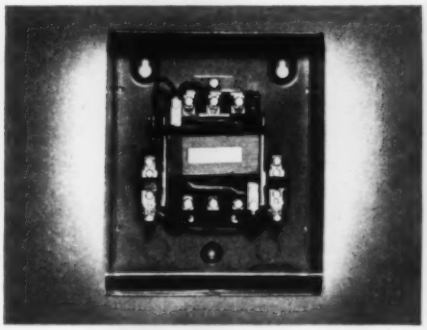
For more information, contact your nearest General Electric Apparatus Sales Office or Distributor, or write Section 733-45, General Electric Co., Schenectady, N. Y. (Ask for Bulletin GEA-6917.)

RUGGED DEPENDABILITY of new General Electric Size 2 starter is proved by severe plugging-duty torture test.

GENERAL ELECTRIC



SNAP-SLIDE CONSTRUCTION permits complete starter disassembly in 20 seconds without tools. All operating parts either snap or slide together for maximum accessibility.



10% MORE WIRING ROOM makes the new Size 2 starter easier to wire, even though it is 14% smaller than previous enclosed forms. Wrap-around cover adds extra accessibility.

STRAIGHT-THROUGH WIRING with line terminals on top and load terminals on bottom saves wiring time. All wiring is done from front, and no wires need be bent or looped.

predictable performer . . .

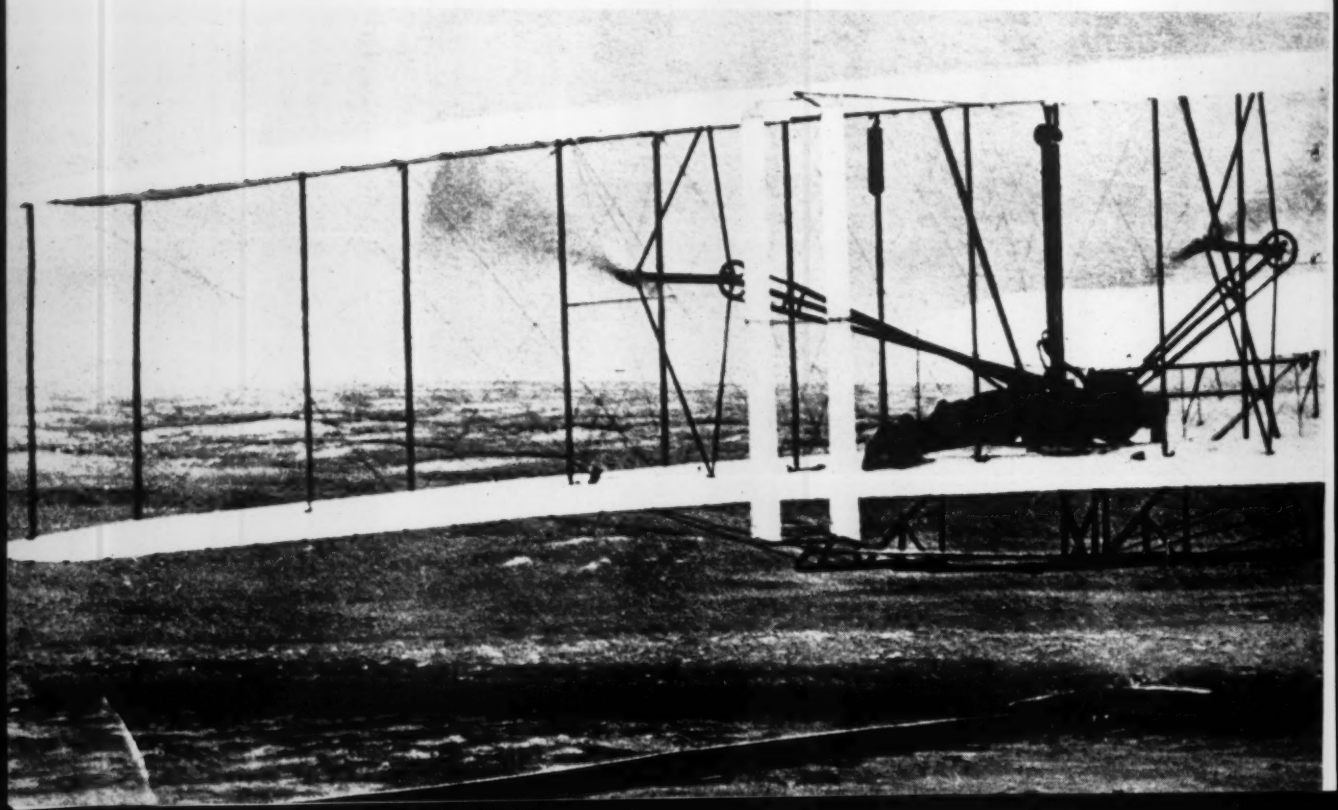
. . . but few believed it until Wilbur and Orville Wright proved it in 1903. Later, Lindbergh—staking his life on the same *predictable performance* first proved possible by the Wrights—flew alone, non-stop across the Atlantic.

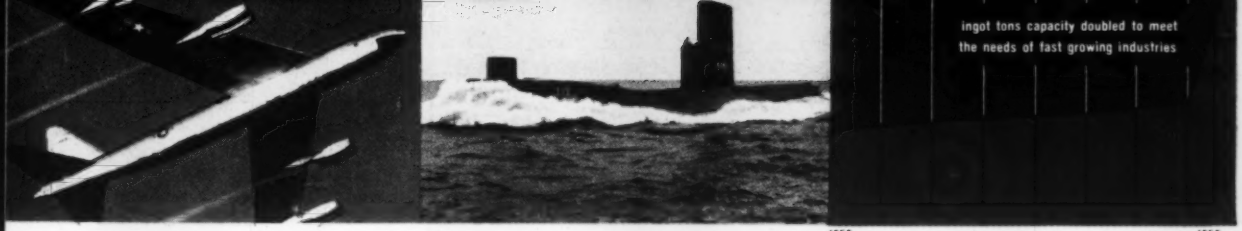
The answer in both cases . . . and still the best answer for today's mighty jets and star-bound missiles . . . vital aircraft components made from uniform, dependable *Carpenter steels.*

The secret of *predictable performance* is in absolute and precise quality control . . . controls first developed in *Carpenter* Laboratories that are now standards for the industry: the Torsion Impact Test, Acid Disc Inspection, Cone Test, the Tough Timbre Test . . . to name a few.

Today, the *Carpenter* MEL-TROL® process—a unique control that utilizes a new, patented ingot mold design—produces steels that approach the ultimate in *predictable performance.*

With this leadership in quality—goes the responsibility of meeting constantly growing demands of the atomic age—more stainless, more tool steels, more specialty alloys. For a company whose history was based on *quality* rather than *quantity,* this was quite a challenge.





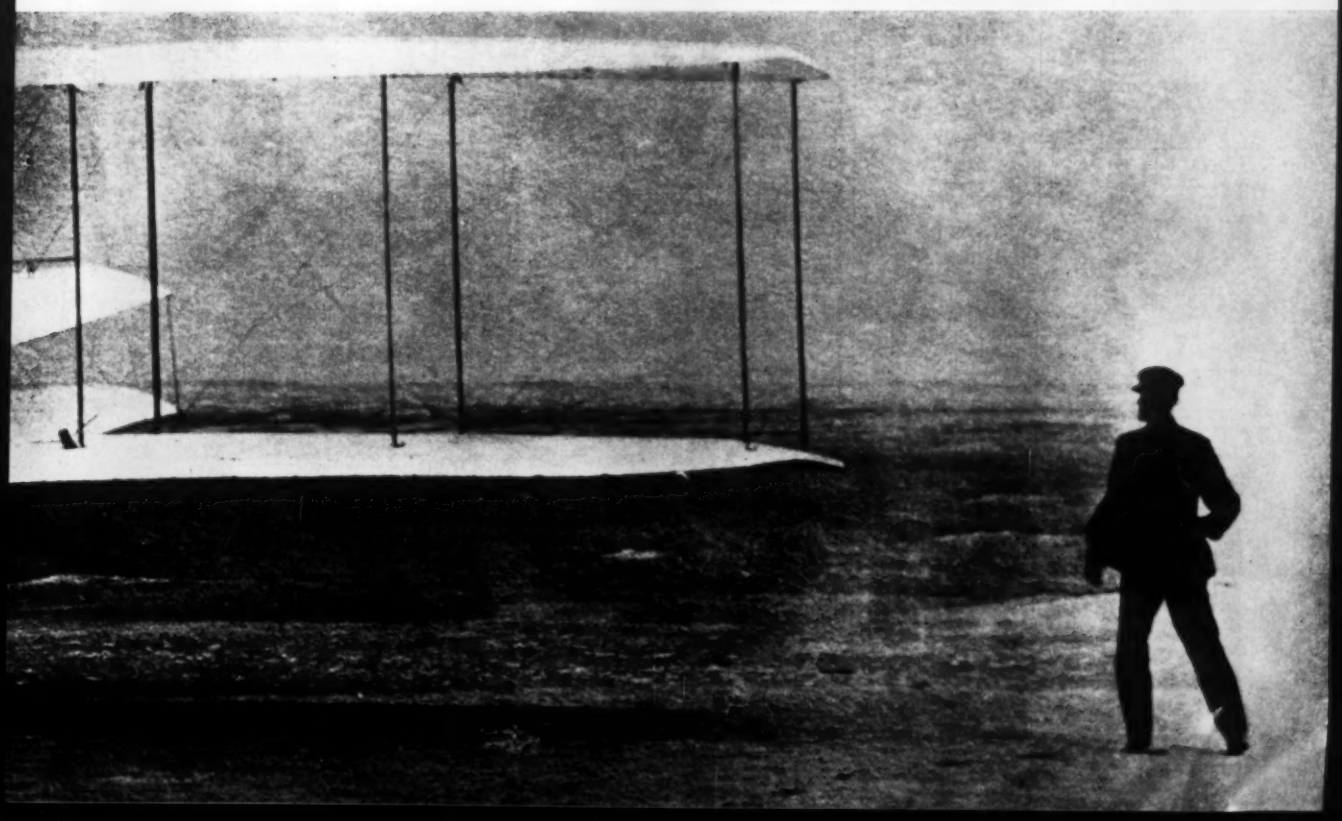
To meet it, *Carpenter* has *doubled its ingot tonnage capacity within the past year* through the acquisition of steelmaking facilities in Bridgeport, Connecticut. New furnaces, mills and finishers—all completely equipped with precise *Carpenter* quality controls—began operation. And capacity—mass production of *predictable performance* specialty steels—is an established fact.

In the years ahead, *Carpenter* will continue to lead the way in quality, and grow apace of industry's ever-increasing demands for the world's finest steels.

tool and die steels
stainless steels
electronic and magnetic alloys
special-purpose alloy steels
valve, heat-resisting and super alloy steels
tubing and pipe
fine wire specialties

Carpenter steel

The Carpenter Steel Company
Main Office and Mills, Reading, Pa.
Alloy Tube Division, Union, N. J.
Webb Wire Division, New Brunswick, N. J.
Carpenter Steel of New England, Inc., Bridgeport, Conn.



SIMONDS

INDUSTRIAL CUT GEARS

LARGE OR SMALL HEAT TREATED OR PLAIN

SIMONDS has over 60 years' experience in cutting quality industrial gears. We can supply any type of gear in cast or forged steel, gray iron, bronze, Meehanite, rawhide or bakelite in a full range of sizes adaptable to the material. Also heat-treated, case or flame hardened gears of carbon or alloy steel. Send us your requirements for quotation.

Custom GEAR CUTTING

SIMONDS' facilities can produce any type of custom gear from your blanks if you prefer. Same quality . . . same prompt service.

QUALITY GEARS FOR OVER 65 YEARS

SPUR GEARS
BEVEL GEARS
MITRE GEARS
WORMS WORM GEARS
RACKS PINIONS

Also stock carrying distributors of Ramsey Silent Chain Drives and Couplings; and industrial V-belts.

SIMONDS GEARS

THE SIMONDS GEAR & MFG. CO.

LIBERTY at 25TH PITTSBURGH 22, PA.

STEEL The Metalworking Weekly

Editor-in-Chief, IRWIN H. SUCH

Editor, WALTER J. CAMPBELL

Associate Managing Editors, VANCE BELL, JOHN S. MORGAN

WILLIAM M. ROONEY .....Market Editor
ROBERT F. HUBER .....Machine Tool Editor
HARRY CHANDLER .....Copy Editor
GLENN W. DIETRICH....Associate Copy Editor
FRANK R. BRIGGS .....Associate Editor
ROBERT O. JAYNES .....Associate Editor
AUSTIN E. BRANT .....Associate Editor
ROSS WHITEHEAD .....Associate Editor
GEORGE J. HOWICK .....Associate Editor

DERRY EYNON .....Assistant Editor
NEIL C. ROBERTS .....Assistant Editor
DONALD E. HAMMERSTROM..Assistant Editor
JOHN TERESKO .....Assistant Editor
WILLIAM M. OLDS .....Assistant Editor
MARY T. BORGERHOFF .....Assistant Editor
MARY ALICE EARLY .....Assistant Editor
EILEEN CORTES .....Assistant Editor
MARY ANN STUVE .....Editorial Assistant

JANE WEDGE, Editorial Assistant

THOMAS H. BRYAN, TOM WELSH, Art Editors

IRENE KASNER, Editorial Service

Resident Editors

New York 17 .....60 E. 42nd St.
B. K. PRICE, L. E. BROWNE
BRIAN WILSON
Murray Hill 2-2581

Chicago 11 .....520 N. Michigan Ave.
ERLE F. ROSS, WILLIAM E. DEAN
Whitehall 4-1234

Pittsburgh 19 .....2837 Koppers Bldg.
WILLIAM V. WALLACE—Atlantic 1-3211

Detroit 35 .....15800 W. McNichols Rd.
A. DONALD POSTMA—Broadway 3-8150

Washington 4 ....1123 National Press Bldg.
JOHN R. BOTZUM—Executive 3-6849

Editorial Correspondents

Buffalo—Emerson 5385 ....GEORGE E. TOLES
Youngstown—Riverside 7-1471..GEO. R. REISS
Cincinnati—Beechmont 1-9607...DICK HAVLIN
Birmingham—Birmingham 3-1121 R. W. KINCEY
St. Louis—Garfield 1-1212. HAMILTON THORNTON
Houston—Hudson 6-5236 .....ROBERT SHIRK

Los Angeles—Webster 5-1234..NORMAN LYNN
San Francisco—Yukon 6-5151 EDWIN HAVERTY
Seattle—Melrose 2-1895 .....R. C. HILL
Toronto, Canada—Empire 4-9655..F. S. TOBIN
Birmingham, England .....J. A. HORTON
Brussels, Belgium .....PAUL DE KEYSER

Dusseldorf, Germany, DR. HERBERT GROSS

BUSINESS STAFF

Business Manager, D. C. KIEFER

Asst. Business Mgr.....C. A. TALLINGER JR.
Advertising Service Mgr. ...DORIS MITCHELL
Production Manager .....A. V. ANDERSON
Classified Advertising .....EVELYN DIETZ

Promotion Director .....S. F. MARINO
Market Research Mgr. ....T. M. BALLANTINE
Circulation Director .....J. C. GERNHARD
Distribution Manager .....G. R. EBERSOLE

Reprints, JUNE SCHILENS

Advertising Representatives

New York 17 .....60 E. 42nd St.
K. A. ZOLLNER, GUY LABAW
Murray Hill 2-2581

Wynnewood, Pa. (Phila.) 200 Wynnewood Ave.
WM. J. VERSCHOOR—Midway 2-6512

Farmington, Conn. .....12 Farmstead Lane
CALVIN FISHER JR.
Orchard 7-1756

E. Rochester, N. Y. .....217 Ridgeview Dr.
HAROLD A. DENNIS—Browning 1-2105

Pittsburgh 19 .....2837 Koppers Bldg.
J. C. SULLIVAN—Atlantic 1-3211

Cleveland 13 .....Penton Bldg.
J. K. GILLAM, N. W. MANNING—Main 1-8260

Cincinnati 6 .....2215 Victory Parkway
E. L. FRANKE—Parkway 1-0711

Detroit 35 .....15800 W. McNichols Rd.
DONALD C. HYDE
Broadway 3-8150

Chicago 11 .....520 N. Michigan Ave.
L. C. PELOTT, W. L. POLAND
WM. J. D'ALEXANDER, RICHARD BIRDSONG
Whitehall 4-1234

Los Angeles 36 .....5943 W. Colgate Ave.
F. J. FULLER—Webster 1-6865

San Francisco 4 .....57 Post St.
Robert W. Walker Co.—Sutter 1-5568

Griffin, Ga. .....1106 Pine Valley Rd.
FRED J. ALLEN—Griffin 7854

Clearwater, Fla. .....1954 Jeffords Dr.
H. G. ROWLAND—(Clearwater) 39-9493

Dallas 35 .....818 Exchange Bank Bldg.
JAMES H. CASH—Fleetwood 1-4523

BPA

NBP

Published Every Monday by
THE PENTON PUBLISHING CO., Penton Bldg., Cleveland 13, Ohio
MAin 1-8260

GEORGE O. HAYS .....Chairman
RUSSELL C. JAENKE .....President
FRANK G. STEINEBACH .....Vice President and Secretary
FRANK O. RICE .....Vice President
JOSEPH P. LIPKA .....Treasurer and Assistant Secretary

Also Publisher of
FOUNDRY, MACHINE DESIGN, NEW EQUIPMENT DIGEST, AUTOMATION
Member of Business Publications Audit of Circulation Inc., Society of Business Magazine Editors, and National Business Publications Inc.

... Results of a Superior Beginning

The countless parts and products made from Roebling high-carbon steel spring wire and flat spring steel have one thing in common . . . their superior quality. This, of course, is related to the inherent fineness of the materials.

The variety in which Roebling offers these spring materials is equally impressive. They are available in hard drawn, hard rolled, annealed or soft, tempered or untempered. Types include zigzag and no-sag wires; upholstery and mechanical spring wires; valve spring wire; clock- and motor-type spring steels and flat spring steels of all types and description.

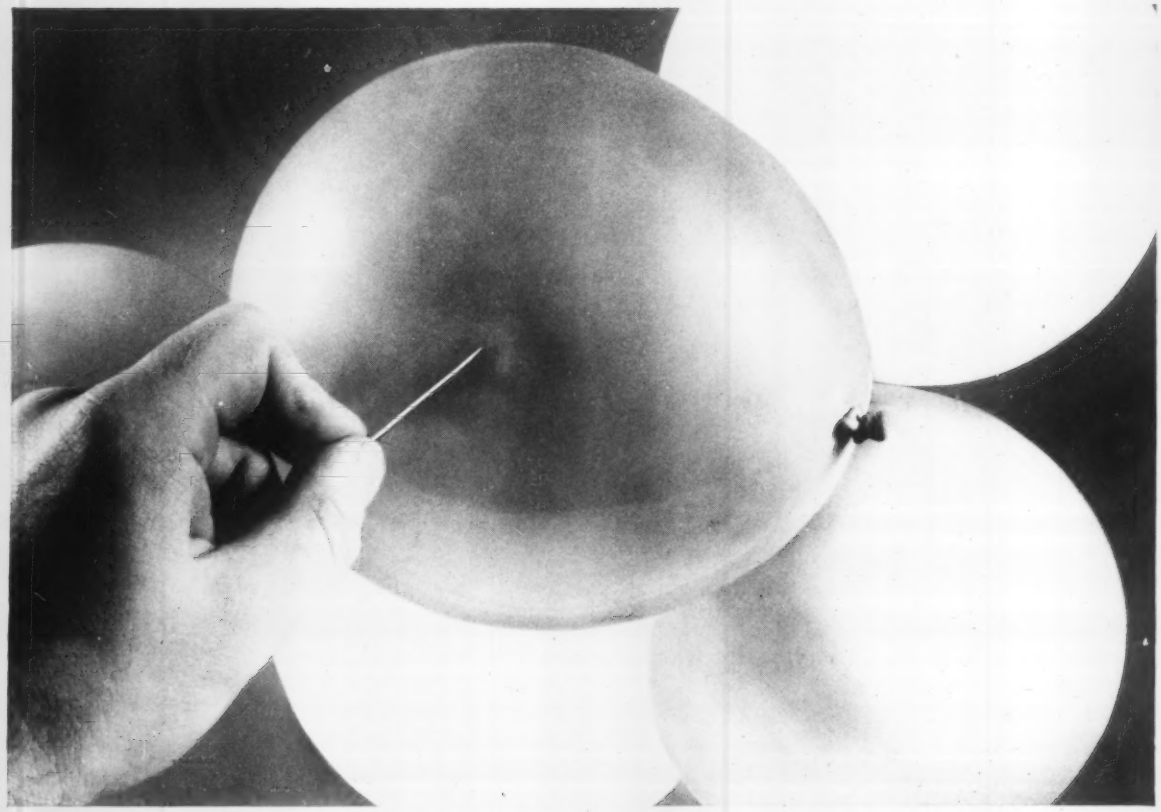
Whatever the type, size or characteristics you require—Roebling can fit your needs exactly. You'll find that Roebling quality means maximum production from your machines and consistent uniformity in your product.

For spring wire and flat spring steel information, contact Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

ROEBLING

Branch Offices in Principal Cities—Subsidiary of The Colorado Fuel and Iron Corporation

Roebling... Your Product is Better for it



Machine Tool Buyers:

Beware the fallacy of projecting today's labor rates!

Almost without exception, machine tool replacement formulas employ an erroneous factor in computing savings they are based on *today's* labor rates.

It seems basically sound to suggest, in the case of a contemplated investment in equipment, that a projection be made as to the estimated period over which the equipment is to be used.

Assuming this to be ten years, it is a fairly simple matter to project the *average* wage rate over the next ten years by using the historical increase for the past several years. This increase is known to be from 5 to 6% per year.

Using 5%, we then have a simple computation to determine the average projected wage rate which should be used in computing savings in a replacement formula.

Assuming a current wage rate of $2.50 per hour, this becomes $4.07 per hour at the end of ten years, or an increase of 62.8% over today's labor rate.

This percentage increase could reasonably be applied also to other factors in the computation of savings, such as indirect labor, fringe benefits, maintenance, etc.

In contemplating the purchase of a piece of equipment which will last for a number of years, it is fallacious, therefore, to compute savings in terms of today's costs only.

Does Jones & Lamson offer a positive approach: a realistic, workable formula that is free from fallacies such as this? *Yes!*

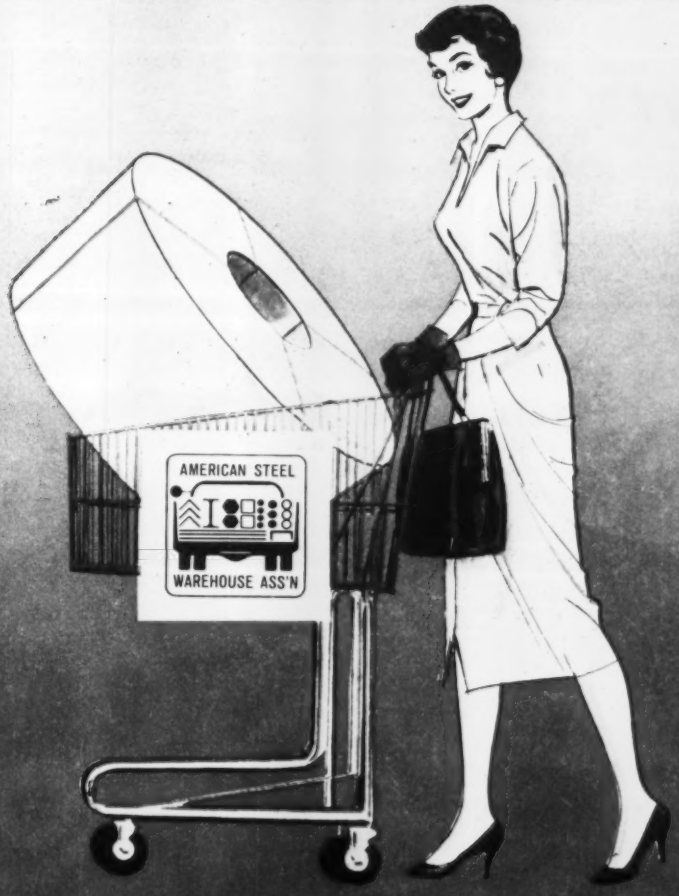
Write today for complete information.

the man who needs
a new machine tool
is already paying for it

JONES & LAMSON Machine Company, 517 Clinton St., Springfield, Vt.

Turret Lathes • Automatic Lathes • Tape Controlled Machines • Thread & Form Grinders • Optical Comparators • Thread Tools

CONVENIENCE



By merely picking up your phone and calling your Steel Service Center, you can order for immediate delivery exactly the steel you need.

It's as easy as super-market shopping because your Steel Service Center stocks every type of steel and will process your order to fit your production schedules. You can save on inventory investment and storage space, too.

Alan Wood supplies major Steel Service Centers with a variety of top-quality steel products. Your nearest Steel Service Center is listed in the Classified Telephone Directory.

ALAN WOOD STEEL COMPANY

CONSHOHOCKEN • PENNSYLVANIA

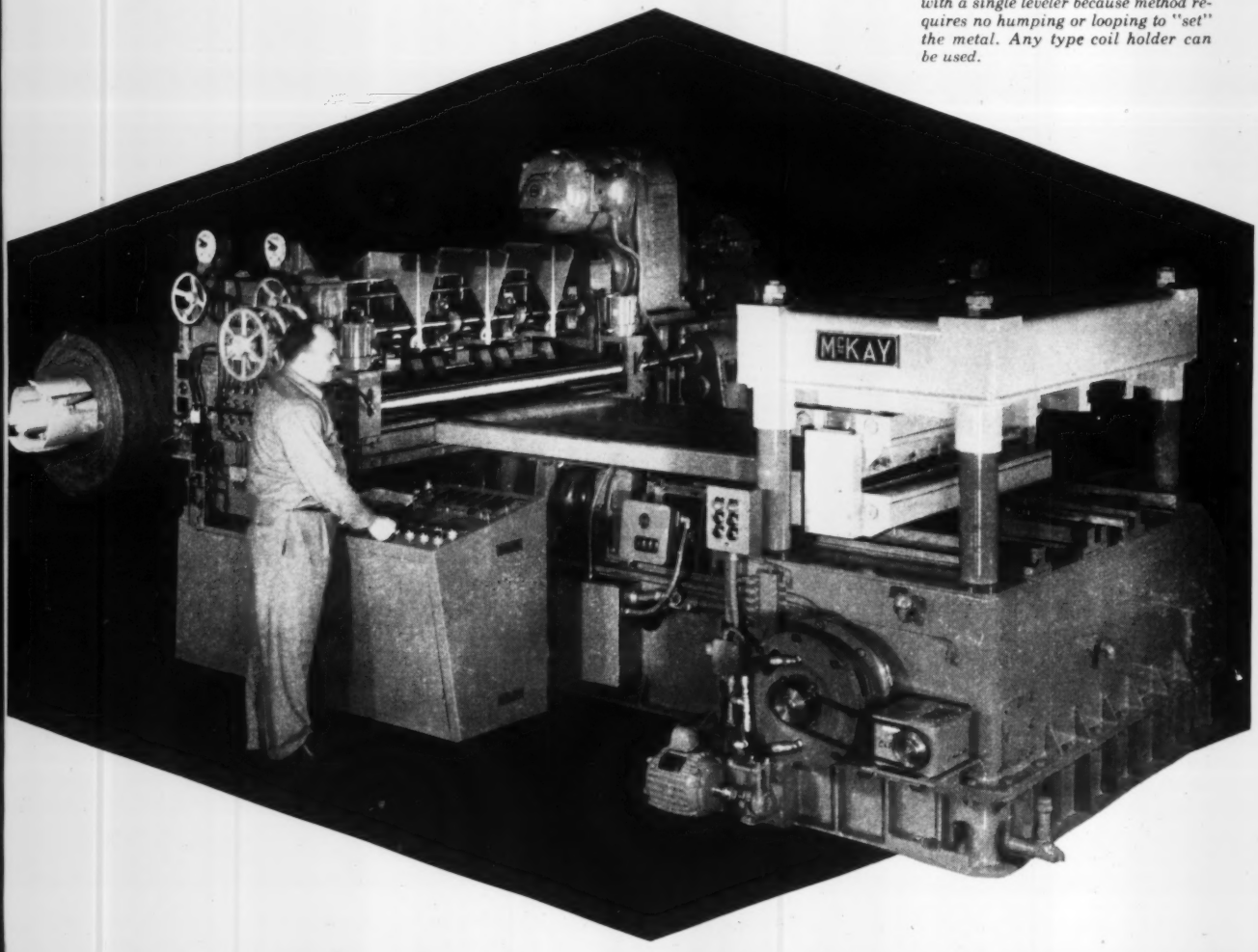
DISTRICT OFFICES AND REPRESENTATIVES:
Philadelphia • New York • Los Angeles • Atlanta • Boston • Buffalo • Cincinnati • Cleveland
Detroit • Houston • Pittsburgh • Richmond • St. Paul • San Francisco • Seattle
Montreal, Toronto and Vancouver, Canada—A. C. Leslie & Co., Limited

AUTOMATIC, INSTANTANEOUS *because of highly accurate electronic counting and measuring mechanisms. Operator simply sets length and quantity by push buttons, shear does the rest. Punched tape or coded card control available.*

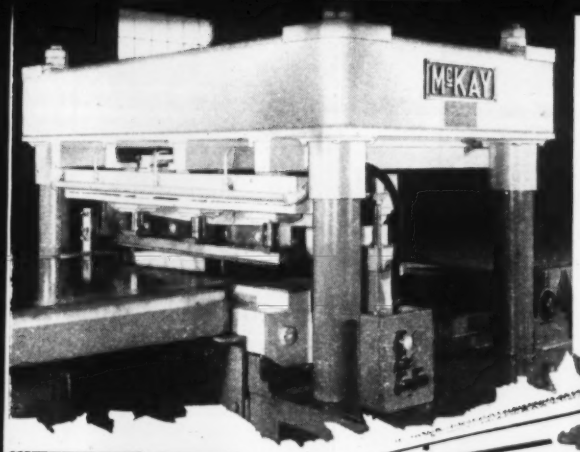
LOW MAINTENANCE *because all drives and controls are simplified AC type, electronic controls are proven standards, cutting dies are standard double-rake shear knives.*

Break

COMMERCIALLY FLAT SHEET *is possible with a single leveler because method requires no humping or looping to "set" the metal. Any type coil holder can be used.*



COMPACT . . . *never before has such a high production unit required so little area. Space saving, it's ideal for warehouse operations.*



through...

in AUTOMATIC SHEARING

Revolutionary McKaymatic* high production Die Shear line instantly responds to length and Quantity Command

Now—a high production cut-to-length line that meets *all* the requirements of modern day coil shearing. It's the revolutionary new McKaymatic* Die Shear Line and it's fast, extremely accurate, instantly adjusted, compact and relatively low in cost!

The McKaymatic* is applicable for use wherever sheet metal is used. Ferrous and non-ferrous mills, fabricators or warehouses should see this amazing new line before they decide on the purchase of new coil shearing equipment.

UNMATCHED FLEXIBILITY offered by a simplified electronic control makes the changing of length of cut instantaneous. When length and quantity commands are changed (manually or automatically) the line reacts instantaneously without slowing down or stopping. EXACTING ACCURACY, also a product of electronics, is equal to or better than any other available equipment. HIGH PRODUCTION, regardless of the number of length changes is possible because there is no downtime for length changing, etc. LOW MAINTENANCE is possible because the line is designed around simple AC drives and controls, and proven electronic components.

There's nothing like it—for large orders or small—in any width or thickness. Here for the first time is practical push button shearing, and it's easily adapted for standard coded card or punched tape systems. For details write today. *The McKay Machine Company, Youngstown 1, Ohio.*

*TM

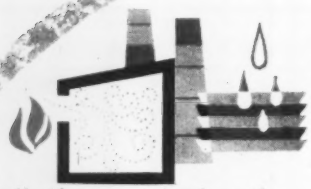
McKAY MACHINE

KAISER ENGINEERS

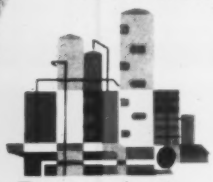
—has designed and built,

—is designing and building,

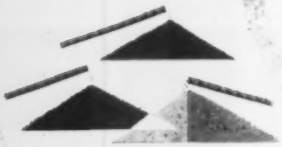
—will design and build...



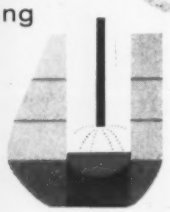
Air pollution control and water treatment



By-products plants



Ore beneficiation and handling

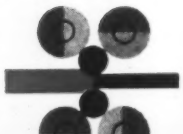


L-D Process plants

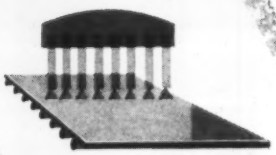
Blast furnaces

Pipe mills

Open hearths



Rolling mills



Sinter plants

Kaiser Engineers designs and builds every part of a steel mill. Been doing it for years. KE has the experience, and the ingenuity, to develop time-cutting, cost-saving new ways to build and operate. The result is a better plant, sooner, for less.

Experience, ingenuity—and a cost-conscious approach. This is what KE can apply to your steel plant expansion program right now. Call or write—today.

Pittsburgh, 330 Grant St., AT 1-7992
New York, 300 Park Ave., PL 9-1100
Oakland, 1924 Broadway, CR 1-2211

KAISER ENGINEERS

KAISER ENGINEERS engineers-contractors
Contracting since 1914

Division of Henry J. Kaiser Company · Oakland 12, California · New York, Pittsburgh, Washington, D. C., Buenos Aires, Calcutta, Dusseldorf, Montreal, Rio de Janeiro, Sydney, Tokyo

HOW HEAVY A LOAD

can a ball bearing carry?

Federal Ball Bearings make light work of the heaviest loads. *Quiet* work, too. We use SAE 52100 steel and engineer extra stamina into every ball and raceway. Each bearing goes through scores of production and quality control steps because, frankly, we're terrible cranks about precision. We insist that you should be able to mount a ball bearing—and forget it.

Our customers seem to like this idea. And they include the most respected names in American industry. So, when you want to take a work load off your shoulders, put it on a Federal Ball Bearing. Our catalog lists over 12,000 ball bearing sizes, hundreds of types. Send for it.

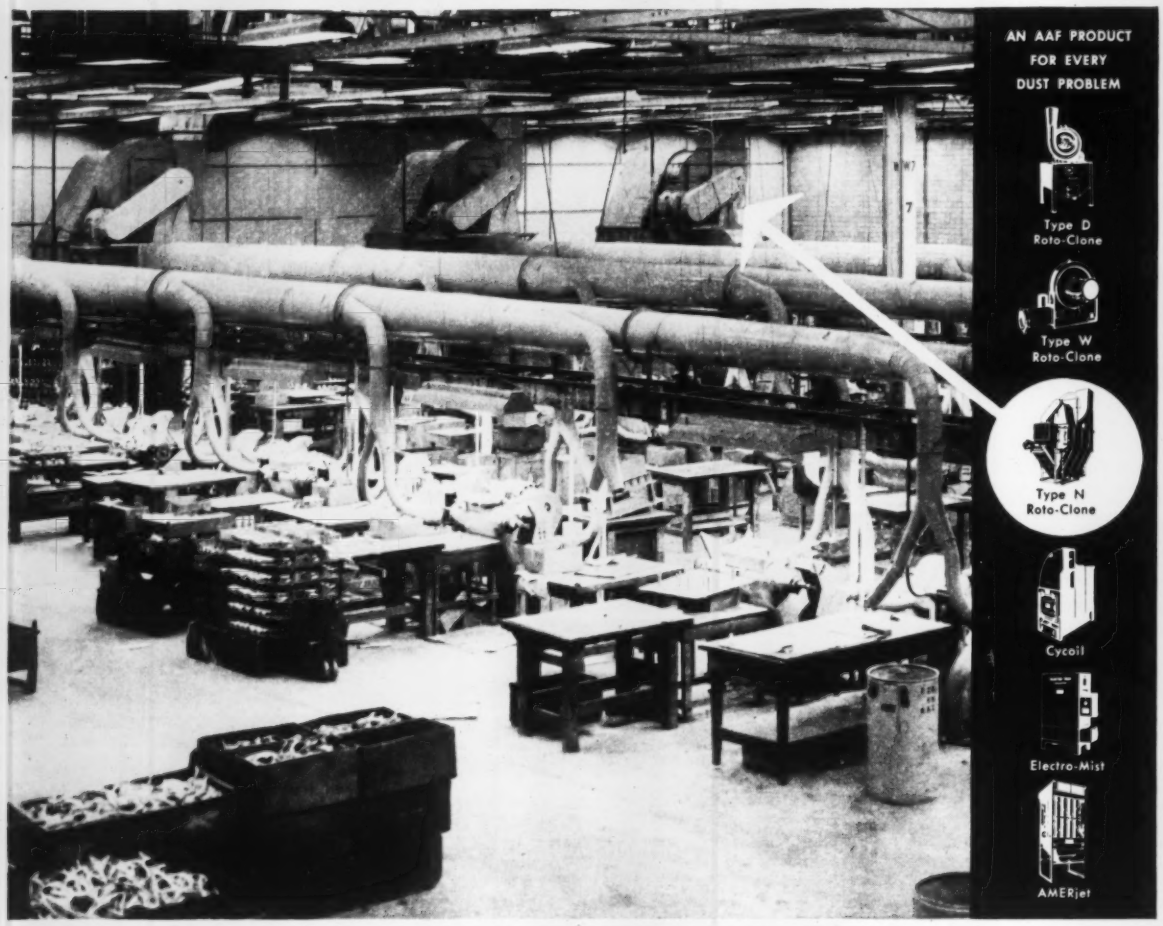
THE FEDERAL BEARINGS CO., INC., Poughkeepsie, N. Y.

Federal
BALL BEARINGS

One of America's largest ball bearing manufacturers

FEDERAL ON FILM—A 16 mm. color sound film takes you through our 400,000 sq. ft. plant. Loaned free. Just ask for it.

BUFFING



AAF Type N ROTO-CLONES stop dust for Electric Auto-Lite

● This sparkling clean buffing area in Electric Auto-Lite's Lockland, Ohio, plant is visible proof of the effectiveness of AAF's Type N ROTO-CLONE. These rugged wet collectors are exhausting 80,000 cfm from manual buffing of die-cast auto accessory parts.

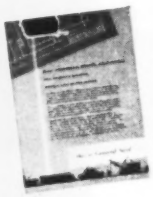
AAF's complete line of dust control equipment was application-developed, now challenges *any* metalworking dust problem. Where are dust, fumes or mists causing you trouble – grinding, buffing, polishing, dry machining, wet machining, heat treating, abrasive cleaning? All can be effectively and economically controlled by AAF.

If buffing dust is your problem, call your local AAF representative, or write direct for Type N ROTO-CLONE Bulletin 277. Address Mr. Robert Moore, American Air Filter Company, Inc., 443 Central Avenue, Louisville, Kentucky.

AAF American Air Filter
BETTER AIR IS OUR BUSINESS

...where industrial progress is cast in steel

DESIGN ENGINEERING...SERVICE IN DEPTH



Write for folder—
How General Steel Castings Can Improve Product Design and Performance.
General Steel Castings, Station 230
Granite City, Illinois

The broad scope of General Steel's design engineering department is unique in the industry. The department is well-staffed with experienced personnel skilled in design, stress analysis, testing and development work. This unified group complements the complete service offered by General Steel.

The design section alone contains many groups of specialists. In addition, you can draw upon the technical knowledge of the stress analysis group; the experimental group, with all necessary equipment and facilities to conduct static and dynamic testing; and the development group, which provides engineering services on special projects. These facilities can be of substantial benefit to you in developing cast steel structures and steel castings used in cast-weld and composite structures for your products.

Our complete services range from creative analysis of your product components in the "raw idea" stage . . . to follow-through on performance in the field. We prefer to team up with you from the start . . . for in this way you can take full advantage of our many specialized talents.

GENERAL STEEL CASTINGS

GRANITE CITY, ILL. • EDDYSTONE, PA. • AVONMORE, PA.

A-B QUALITY

ALLEN-BRADLEY
Solenoid Starters give

MORE MILLIONS OF TROUBLE FREE OPERATIONS

. . . and for good reasons

• ONE MOVING PART

With this simple solenoid design, there's virtually nothing to go wrong—all trouble-causing bearings, pivots, and flexible jumpers have been eliminated.

• DOUBLE BREAK, SILVER ALLOY CONTACTS

Allen-Bradley silver alloy contacts never require maintenance. They are always in perfect operating condition . . . and remain so until completely worn away.

• SIMPLE UP-AND-DOWN MOTION

The virtually frictionless, straight line vertical motion provides uniform contact pressure at all times—and assures consistent, rapid operation of the contactor.

• RELIABLE OVERLOAD PROTECTION

All A-B starters are equipped with two permanently accurate and reliable overload relays that protect motors against "burnouts." Three overload relays can be furnished.

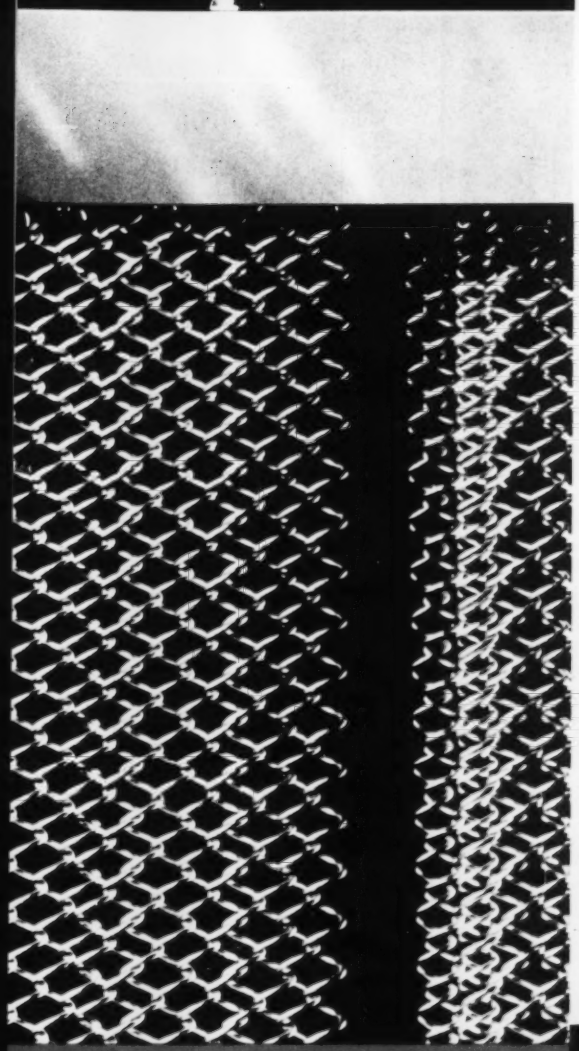
BULLETIN 709 STARTERS are made in 9 sizes from Size 0 (at left) up to Size 8.

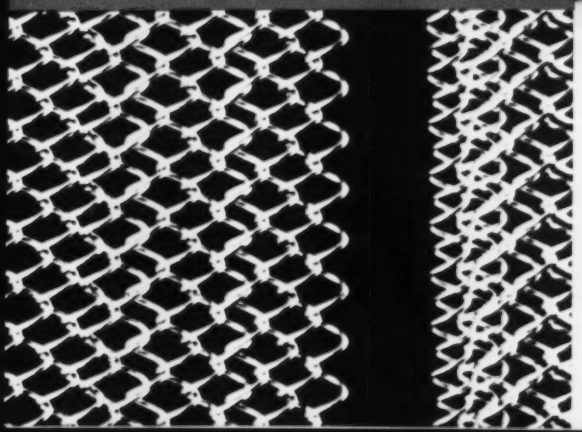
BULLETIN 709 SIZE 7 with maximum ratings of 300 hp, 220 v; 600 hp, 440-550 v.

ALLEN-BRADLEY

Allen-Bradley Co., 1320 S. Second St., Milwaukee 4, Wis.
In Canada: Allen-Bradley Canada Ltd., Galt, Ont.

QUALITY MOTOR CONTROL

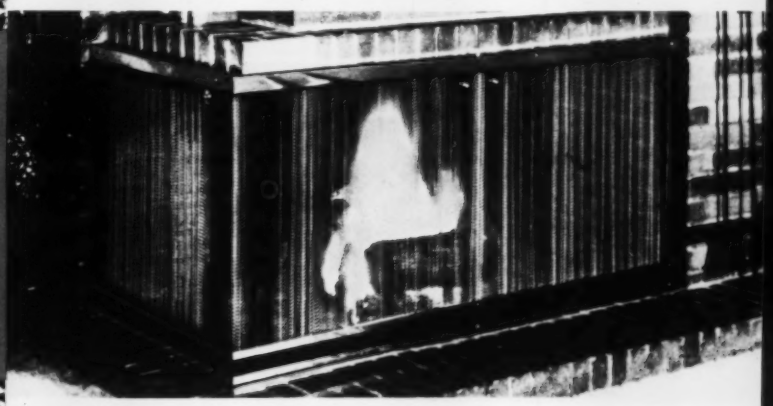




KEYSTONE WIRE
and
MODERNSCREEN
build a better fire screen

To volume produce fire screen like you see here, Portland Willamette Company, Portland, Oregon, employs incredibly accurate and complicated weaving looms. Successful operation of these automatic machines requires a perfect forming wire—a wire that is absolutely uniform throughout the thousands of feet in the long continuous coils. Modernscreen's wide range of finishes for fireplace screens demands a perfectly clean wire. It's made that way at Keystone and is shipped in moisture-proof fibre drums to protect it until ready to thread into the weaving looms.

Teamwork between Modernscreen and Keystone developed a wire with the necessary uniformity and surface qualities, and a packaging program to protect its extra clean finish. For these reasons, Modernscreen specifies Keystone Wire.



Keystone Wire specialists will work with you to help develop the wire that can enhance the saleability of your product—cut costs —increase quality. Call your Keystone representative today!

KEYSTONE STEEL & WIRE COMPANY, PEORIA 7, ILLINOIS

KEYSTONE

WIRE FOR INDUSTRY

ACTUAL SIZE

From General Motors...

A RELIABLE SOURCE OF QUALITY DIE CASTINGS

Brown-Lipe-Chapin offers you extensive die casting, electroplating and stamping facilities for immediate volume production!

In a new diversification program, Brown-Lipe-Chapin offers its die casting and metal stamping services to manufacturers outside the automotive field. Leaders in the field of quality bright work, Brown-Lipe-Chapin now seeks to contribute proven quality and add new sales appeal to your product.

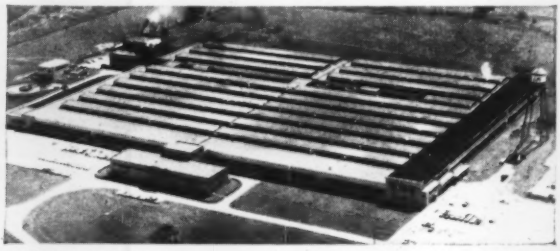
You'll get results in reliability! A fully qualified staff of engineers—experienced and skilled in all phases of die casting and steel or aluminum stamping—will recommend the best and most economical way of producing your parts. Also, you will find that the low cost includes a number of important Brown-Lipe-Chapin extras that add nothing to the price, yet may add significant advantages to your product.

Here are some important Brown-Lipe-Chapin extras:

- Facilities for mass-producing die castings and steel or aluminum stampings, with related processes of anodizing, electroplating and painting *all under one roof.*
- Quality that's rigidly controlled step by step . . . quality that has been proven by successfully meeting the rigid standards and specifications of the automotive field for years.
- Advance research to improve products and methods. For example, recently a new dimension in durability was achieved with the first major advance in the chrome plating industry in twenty-five years.
- Mass-production experience that assures delivery to meet your schedules *right on time.*
- A guarantee to every new customer to supply their die casting and stamping requirements for as long as they may want to specify.

We welcome the opportunity to talk to you about your current needs and future plans. Contact Brown-Lipe-Chapin, Division of General Motors Corp., Syracuse, N.Y.

SYRACUSE, N. Y.
This 10-acre plant has complete modern facilities to stamp, die cast, anodize, plate and paint parts to exact specifications.



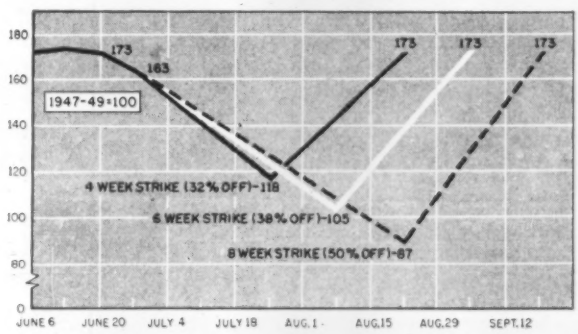
ELYRIA, OHIO.
This 15-acre plant is equally capable of supplying your volume requirements. And its central location means fast delivery.

GM GENERAL MOTORS

RELIABILITY by BROWN·LIPE·CHAPIN

DIVISION OF GENERAL MOTORS CORPORATION

Steel Strike: What Effect on Economy?

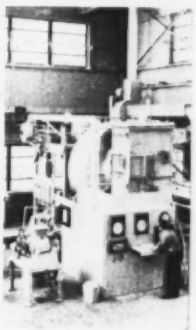


This table shows what would happen to STEEL's industrial production index during a steel strike lasting four, six, or eight weeks. But this is a narrow gage, so the impact seems worse than it would be. Gross national product would continue to expand during a strike, and the Federal Reserve Board's production index would suffer only a dent (Page 37). Reason: Most steel users have large enough inventories to work for four to six weeks after a strike begins.

Will Tight Money Slow the Boom?

Some businessmen are beginning to think it will. Auto dealers and home builders say tighter money is starting to cost them sales. And it's cutting into profits for some businessmen since tough price competition doesn't allow higher interest rates to be passed along in selling prices. Expect more banks to insist that business borrowers maintain a sizable "compensating balance" (leaving up to 20 per cent of the amount of a loan on deposit); it hikes the cost of money. You can expect to feel the impact of tight money more in the coming six months.

Republic Scores Breakthrough in Direct Reduction



Strip steel is being made from iron ore, without melting, by Republic Steel Corp., at its new research center in Independence, Ohio. The revolutionary process bypasses coke ovens, blast furnaces, open hearths, and blooming mills. The ore is purified, reduced to iron powder, and rolled into a semisolid strip. Heating in a reducing atmosphere and further rolling produce hot coils comparable to those made conventionally. To date, all work has been done in a laboratory, but a pilot plant will soon be started to solve quantity production problems (Page 44).

Westinghouse's Cresap Predicts Big Changes

America is within ten years of ultrasonic dishwashers, irradiated foods, picture frame television carrying intercontinental programs, fully automated factories,

continuous steel casting, and direct reduction of ore, believes Mark W. Cresap Jr., president, Westinghouse Electric Corp. We're in a period of "bold experimentation and great discovery" when "forces of change and growth will have a profound effect on management," he asserts. Three reasons: A soaring population (net annual addition: 3 million people), rising living standards (he predicts that, by 1975, American people will have 30 per cent more disposable income), and rapidly improving technology (the nation's R&D spending has climbed from $500 million annually in 1940 to more than $10 billion this year). We'll spend twice as much on R&D in the '60s, he declares.

Strike Threat Looms in Nonferrous

You may see widescale labor troubles in the nonferrous industries this year. At least 85 contracts in copper, lead, zinc, and brass expire between June 30 and Nov. 10. The two big unions in the field—the Mine, Mill & Smelter Workers and the Steelworkers—are pushing for higher wages, a shorter workweek, SUB, and escalation clauses. Both sides have indulged in tough talk and indications of any kind of compromise are few (Page 52). The size of the settlement in steel could affect the nonferrous bargaining, and your supplies may be pinched before it's over.

Now Jimmy Really Has Troubles

When a U. S. Court of Appeals upheld the right of court-appointed monitors to force a cleanup of the giant Teamsters union, it marked James Hoffa's most severe setback in his tenure as Teamster boss. Some observers are calling the ruling by Judge F. Dickinson Letts "the most significant breakthrough against union corruption since the formation of the McClellan committee." The ruling provides a broad charter for action by the monitors to compel a sweeping out of corrupt influences and could eventually lead to the dismissal of Hoffa himself. Godfrey P. Schmidt, a monitor and the legal counsel for 13 anti-Hoffa, rank-and-file Teamsters, seems about to press for a showdown on Mr. Hoffa's fitness to continue in office. It may come as soon as the monitors have rid the union of Mr. Hoffa's gamiest associates.

Unions Have Little Success in Whitecollar Drive

It's getting so that industrial unions need whitecollar workers worse than they need the unions. Despite continued attacks on the growing whitecollar ranks, union membership is declining (Page 40). A University of Michigan survey finds that most engineers and scientists have no desire to join unions. If yours are dissatisfied, take a tip from the study (Page 42).

Soviet Lauds U. S. Productivity

Productivity in U. S. steel plants is considerably higher than that in Soviet mills, the chairman of the Soviet steel delegation to the U. S., Aleksandr F. Borisov, reported in a Soviet newspaper. He attributed the higher productivity to the greater mechanization of service jobs (like material handling and scrap removal) in U. S. mills. He claimed, though, that the productivity of Soviet blast furnaces and open hearths was one-third to one-half greater than that of corresponding American units. Construction of steel plants and equipment is done faster in the U. S. than in Russia, he admitted.

But Productivity in Steel Lags That of Economy

George Washington University's Dr. John W. Kendrick reports that productivity in the iron and steel industry from 1947 to 1957 lagged that of the general economy. He said that situation, plus the fact that prices of labor, capital, and materials have risen more in iron and steel than in industry generally, is the cause of the rising price of steel mill products relative to wholesale prices generally. This is dampening sales gains in both domestic and foreign markets, he notes.

Latest in GM Antitrust Inquiry

The Justice Department is moving into the locomotive manufacturing segment of General Motors Corp.'s activities as it continues its antitrust inquiry by a federal grand jury in New York. Several railroads have been subpoenaed to produce a mass of records by the end of this month.

Mechanized Scrap Handling: Profitmaker

In your search for greater efficiency, don't overlook mechanized scrap handling. An underfloor conveyor (see picture) can boost usable floor space 15 per cent. In some plants, the value of reclaimed coolant alone justifies installation of a handling system. It also eliminates machine shutdowns for scrap removal and saves many dollars in labor costs (Page 98). It's faster too. At one plant, 5 tons of scrap an hour are collected from machines over a wide area.

Wheeling Steel in Oxygen Venture

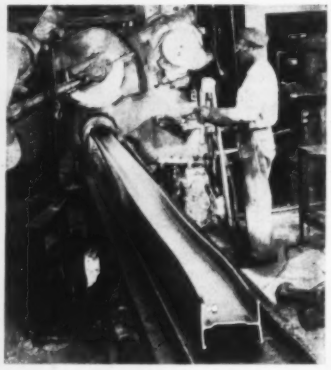
Wheeling Steel Corp. and Hydrocarbon Research Inc. of New York have formed Mingo Oxygen Co. to build and operate a $6 million oxygen generating plant at Mingo Junction, Ohio. Wheeling's bessemer converters there will be adapted to the oxygen vapor process.

The Pentagon Makes a Missile Decision—Finally

The Defense Department master plan for air defense, conceived after much interservice bickering, will mean cutting $1.5 billion from the Bomarc and Nike-Hercules antiaircraft missile programs, Sen. Richard B. Russell (D., Ga.) disclosed last week. The plan also calls for stepping up the research and development program of the Nike-Zeus antimissile weapon; about $157 mil-

lion in research funds will be added. Fiscal 1960 spending for Hercules (produced by Western Electric Co. and Douglas Aircraft Co. Inc.) and Bomarc (Boeing Airplane Co.) programs will be cut about $35 million each. Senator Russell said Defense Secretary Neil McElroy estimates savings of $1.5 billion over the next five years will result from the cutbacks. He said the Nike-Zeus program "can run into billions of dollars."

Extrusions Find More Jobs



Watch for extrusions to become increasingly important to metalworking. Users appreciate such advantages as the intricate shapes you can make, the close tolerances, and the few finishing operations. Expect extrusions to be made from more metals and to appear in wider applications. Look for sales of aluminum extrusions to rise 25 per cent this year, magnesium 17 per cent (Page 121).

Furniture Manufacturers Are Optimistic

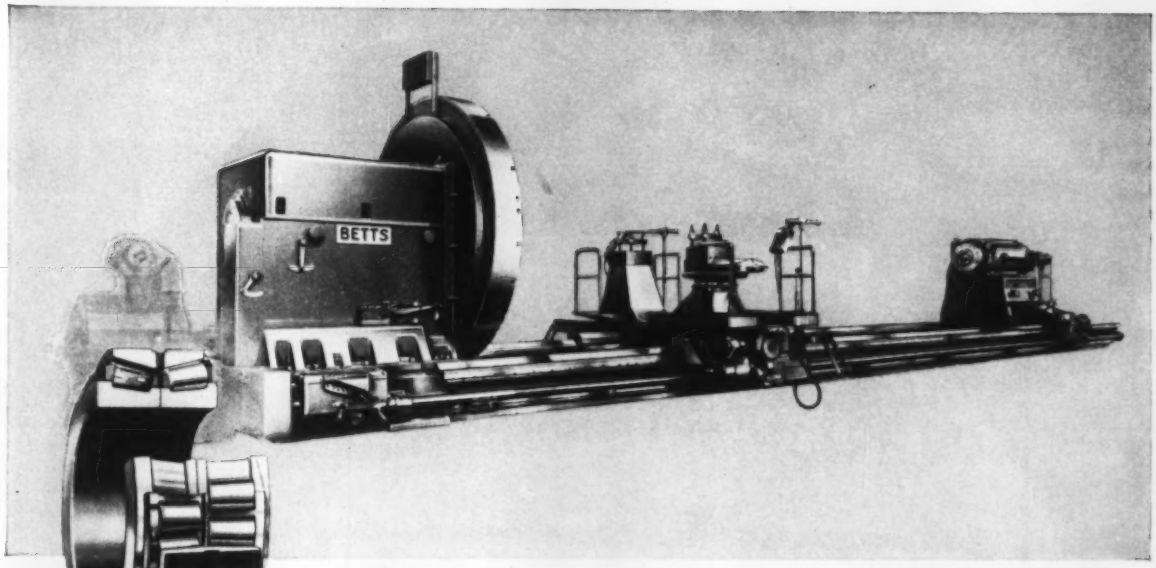
Check the booming furniture industry as a market for your products. It expects 1959 shipments to hit a record $2.6 billion—12 per cent better than last year's and 1 per cent above the previous high set in 1956. John M. Snow, vice president, National Association of Furniture Manufacturers (now meeting in Chicago), predicts that makers will boost prices 3 to 5 per cent this summer. But Kroehler Mfg. Co. announced price reductions as the Chicago show opened last week.

Kefauver Charges Administered Prices; Companies Deny It

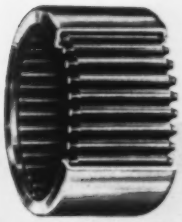
Sen. Estes Kefauver (D., Tenn.) says his antitrust and monopoly subcommittee will hold hearings sometime in August on charges of administered prices in the electrical equipment industry. He says major manufacturers submitted identical bids on equipment for a TVA project. General Electric Co., one of the bidding firms, says the conclusion is "completely erroneous."

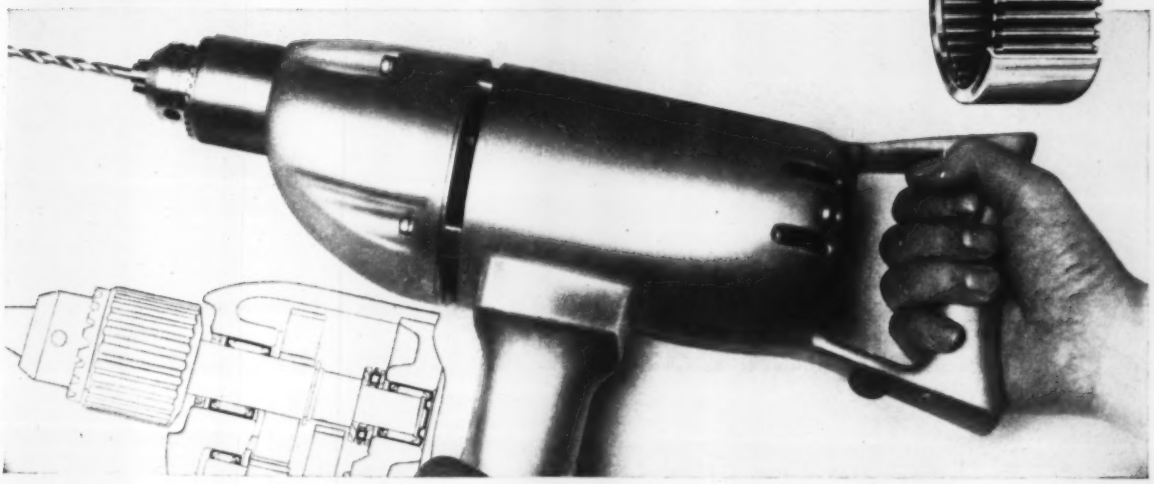
Straws in the Wind

Expect the President to O.K. a bill passed by Congress raising the interest rate ceiling on privately financed VA loans to 5¼ per cent (from 4¾). It should stir a little interest in the now dormant mortgage field . . . An increase in aluminum prices is "inevitable" if upcoming labor negotiations in the aluminum industry result in a wage boost, D. A. Rhoades, vice president and general manager, Kaiser Aluminum & Chemical Corp., said last week. But don't expect it to amount to more than the 2 cents a ton that prices were cut in April, 1958 . . . Acme Steel Co. melted the first steel in its new $33 million cupola oxygen converter on June 17. The Riverdale, Ill., facility has two, 25 ton, hot blast cupolas and two, 50 ton, basic oxygen converters. Annual capacity: 451,760 tons . . . McLouth Steel Corp. will spend $11 million to double sinter capacity and boost oxygen steelmaking capacity at Trenton, Mich.



from machine tools . . . to hand drills





Torrington makes the right anti-friction bearing for every basic need!

In a huge lathe, the need may be for a five-foot diameter Torrington Tapered Roller Bearing, precise to a few ten-thousandths of an inch. In a hand drill, it may be for a compact Torrington Needle Bearing, fractions of inches in diameter for light weight and easy handling.

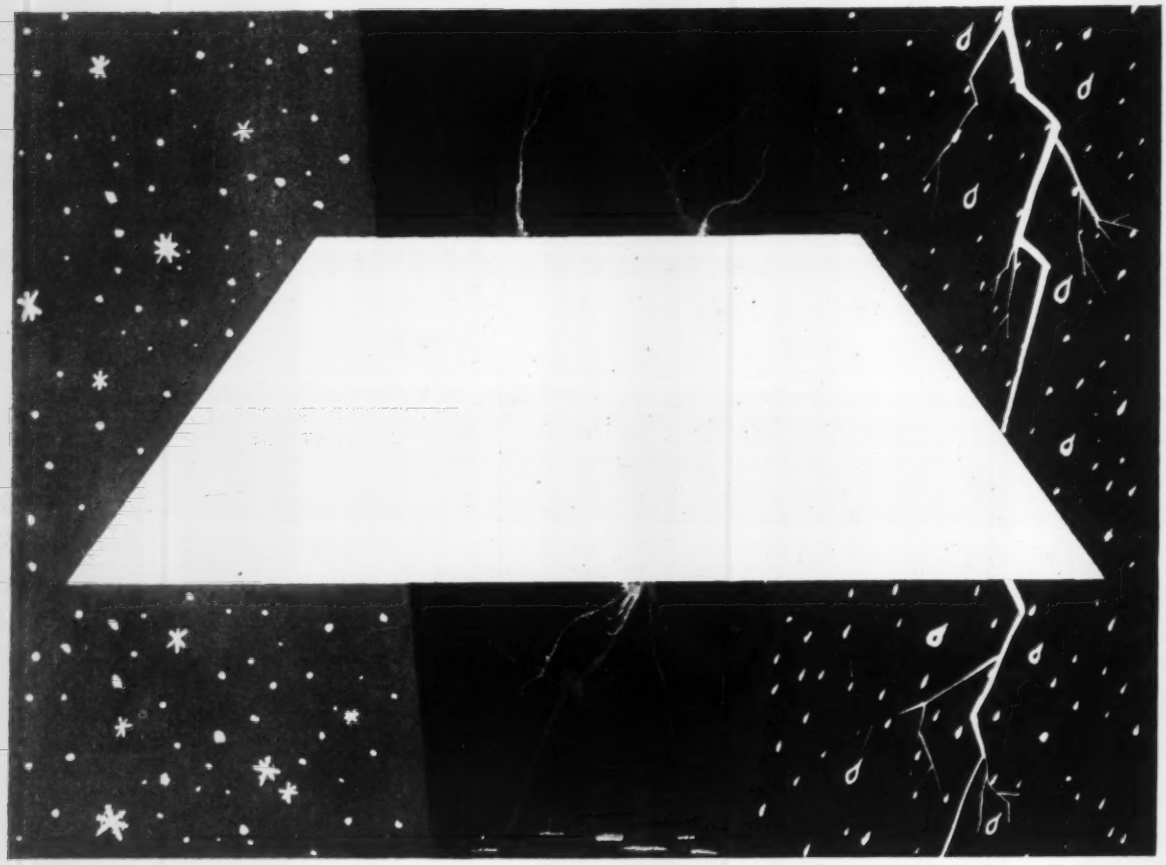
Whatever the requirement, large or small, special or standard, Torrington makes the right type of anti-friction bearing for your specific needs.

You can rely on the broad and diversified experience of Torrington in the design, manufacture and application of anti-friction bearings. Call on your Torrington representative for help in selecting the right anti-friction bearing for your product. **The Torrington Company, Torrington, Conn.—and South Bend 21, Ind.**

TORRINGTON BEARINGS

District Offices and Distributors in Principal Cities of United States and Canada

SPHERICAL ROLLER • TAPERED ROLLER • CYLINDRICAL ROLLER • NEEDLE • BALL • NEEDLE ROLLERS • THRUST



Armco ALUMINIZED STEEL Type 2 beats back corrosion outdoors

Armco ALUMINIZED STEEL Type 2 was created to resist outdoor corrosion. 20-year tests in a mild industrial atmosphere show that the aluminum coating on this special sheet steel averages three times the life of a standard zinc coating on unpainted galvanized sheets.

At the same time, strength, attractiveness, low cost, workability, and radiant heat-reflecting efficiency are combined in ALUMINIZED STEEL to make it ideal for a growing range of outdoor applications.

Here's the secret of its unique advantages: Armco ALUMINIZED STEEL Type 2 is sheet steel coated on both sides with aluminum by an Armco-developed patented hot-dip process. It's a 2-in-1 metal—with the surface advantages of aluminum and the strength of steel.

For more information, write Armco Steel Corporation, 2749 Curtis Street, Middletown, Ohio.

New steels are born at Armco

ARMCO STEEL

Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

Labor Needs Controls Too!

This is the economic picture as we wind up the first six months of 1959:

Industrial production as measured by the Federal Reserve Board is at an all-time high. Based on 1947-49, it stands at 152 compared with the low of 126 in 1958 and the prerecession peak of 146.

Steel production of nearly 64 million tons in the first half eclipses the previous peak of 62 million tons in the 1956 period.

Passenger car production of 3.4 million units in the first half doesn't match the 4.9 million made in the same period of 1955, but it is 50 per cent higher than the 1958 pace.

Expenditures for plant and equipment, again on the way up, will come within $5 billion of matching record outlays of $37 billion in 1957.

The index of orders for industrial supplies and equipment stands at 235, 14 points above the previous high established in January, 1957.

But against this background of apparent prosperity, we have several highly disturbing factors:

1. Workers in the steel, copper, zinc, and lead industries in all likelihood will go on strike June 30. In the aluminum industry the strike date is July 31.

2. Industry has been forced to build up inventories artificially, so there is no way to measure how much of the recovery from the 1958 recession is genuine.

3. People generally are worried about what the wage settlements will be and what influence they will have on our economy.

Those and similar disturbances can be blamed on unions that have grown like Topsy in a few short years without legislative restraint.

They can get away with acts that would land a company or an individual in court or even jail.

It is too late to do much about the current mess. But something can be done about the future.

It means taking a firm stand in union negotiations and laying the facts on the line so they can be absorbed and understood by everyone, including our congressmen!

Irwin H. Such

EDITOR-IN-CHIEF

SINCE
1887

JUST WHAT YOU WANT

...standard and special washers for every purpose ...sizes, shapes, and materials to meet your requirements

Whether your immediate need is for tiny brass washers averaging 588,000 to the pound — or massive washers 23¼" in diameter, weighing 21 lbs. each — Wrought Washer *has* or *can produce* just what you want, to your specifications. Over 100,000 sets of dies are available to you without extra cost. If your specifications happen to match any one of them, the cost of new dies is eliminated.

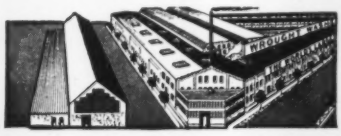
As the world's largest producer of washers, we offer you a dependable source of supply for the washers and stampings you need — anything that can be punched out of metal, plastics, fibre, and other materials — within the practical limitation of mass production. You, as a user of washers, are assured of *highest quality* at competitive prices. Send us your specifications so that we may quote on your washer or stamping requirements. Write for Catalog 40-A if you do not have a copy.

All Standard and S.A.E. sizes are available in 1-lb. and 5-lb. boxes as shown here, and in 100- and 200-lb. containers for bulk orders.

WROUGHT WASHER MFG. CO.

the world's largest producer of washers

2103 S. BAY STREET · MILWAUKEE, WISCONSIN

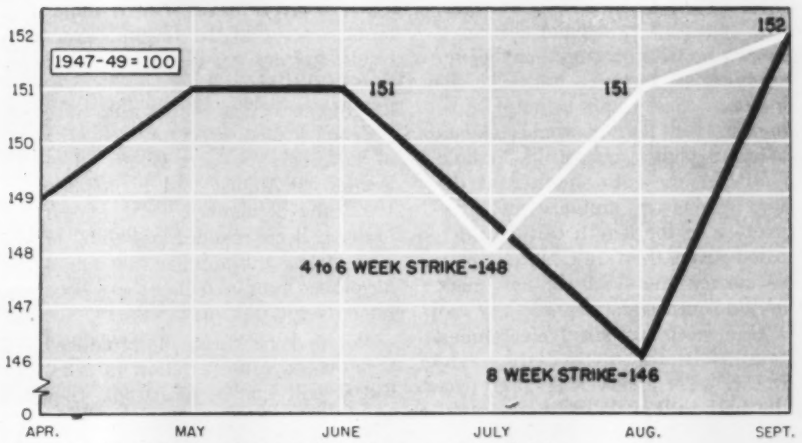


A9-9707

STEEL

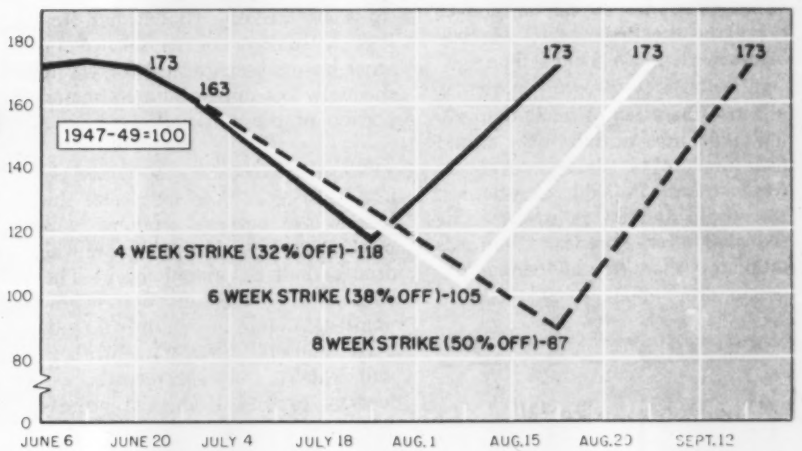
In a Six Week Steel Strike . . .

Total Industrial Production* Would Dip Less than 2%, but . . .



*Federal Reserve Board's Industrial Production Index, seasonally adjusted.

STEEL's Production Index* Would Plummet Between 32 and 38%



*Industrial Production Index components: Steel production, auto assemblies, electricity output, railroad freight carloadings, unadjusted.

IF STEELWORKERS go on strike for four weeks beginning July 1, they will lose about $213 million in wages.

If the walkout lasts six weeks, the loss will climb to about $321 million.

If they stay out eight weeks, they will lose $430 million in base pay, or more than half as much as they have in all steel strikes since the end of World War II.

To many observers, loss of pay will be the most noticeable strike damage, unless it goes beyond eight weeks. As the top chart above shows, even a six week work stoppage would do little more than put a dent in industrial production.

First reason: Most manufacturers dependent on the steel industry have planned on at least a six week strike. They either have enough metal on hand or will take a vacation during a shutdown to stretch out their supplies.

Second reason, and even more important: The steel industry, large as it is, is still only a small part of the industrial community. In the Federal Reserve Board's production index, it accounts for only 5 per cent of the weightings. Its 649,000 employees in April accounted for only about 1 per cent of employment. (Union officials say about 510,000 USW workers could be involved in a total shutdown.) In 1958, the industry's wage earners collected $2.4 billion, less than 1 per cent of national personal income ($353.5 billion).

The impact of a strike deepens as your measuring gage narrows. STEEL's industrial production index will dip significantly. That's because: 1. Steel production accounts for 35 per cent of the index. 2.

Railroad carloadings, which would be cut drastically, account for 22 per cent of the weightings. 3. The index is a raw figure, unadjusted for seasonal changes.

• **Hardly a Ripple**—But gross national product, perhaps the broadest business indicator in common use, will continue to expand during a six week strike, though maybe not as much as during a nonstrike situation. (See graph below.) Economists feel that it would take at least an eight week strike to hold GNP for the third quarter at the second quarter annual rate. Regardless of the length of the anticipated strike, they see GNP climbing to nearly the $500 billion mark in the fourth quarter.

One steel company researchman says: "If the strike lasts eight weeks, we're almost sure to go over the half trillion dollar mark in the last quarter. Steel operations would be at an all-time high. If the strike is less than six weeks, though, it will be the first quarter of 1960 before we'll reach $500 billion."

• **But Others May Feel It**—Only a few industries outside steel would feel much of a pinch from a six week strike. Probably the hardest hit would be the railroads. The Association of American Railroads estimates that freight carloadings would drop about 100,000 cars in the first week and 150,000 in the second. The cumulative loss at the end of four weeks would mount to 550,000 cars, at the end of six weeks, 870,000 cars. After six weeks, the damage would be even greater because steel users would be forced to cut back shipments.

The AAR continues: "It might be expected that the revenue losses resulting from a steel strike would cause a reduction in orders for new freight cars . . . steel strikes do have a demonstrated effect on deliveries of new cars by carbuilders. Deliveries in August and September, 1952, and September, 1956, appear to have been reduced one-third or more below the number that might have been produced had there been no strikes."

Automakers think a prolonged strike could cause a falloff in sales. But it will not be disastrous, they feel. "At most," says one market researchman, "we could lose 100,000 to 150,000 new car sales in a six week strike. That would reflect a shaking of confidence in other buyers because steelworkers in themselves do not constitute a major portion of the market."

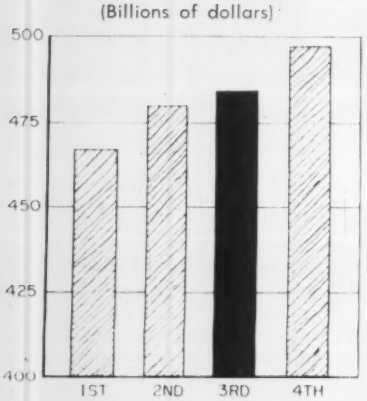
• **The Drop Gets Bigger**—However, if a strike goes over six weeks, the loss to the nation's economy will pile up quickly. STEEL's index will drop to half its present level. The FRB index will hit its lowest point in August. After July 1, several thousand more steelworkers will walk out as contracts or extensions expire. If there is no settlement by Sept. 1, almost all the estimated 510,000 USW members in the steel industry will be pounding the bricks. And a large portion of the metal fabricating plants will be shut down for lack of steel.

One steelman estimates that if the strike lasts up to three months, the Federal Reserve Board's total production index will drop 20 points below the present level.

• **Before and After**—One point not to be overlooked: The before and after effects of such an industry-wide walkout. The charts on Page 37 show the effects of an early shutdown of steelmaking furnaces. STEEL's index could drop 10 points in the last week of June. This shows up in the FRB index as a leveling off in June instead of further expansion. Once a strike is settled, it takes a full month before operations return to prestrike levels. At that time (assuming we have a strike) the stage will be set for one of the most vigorous upturns in the fourth quarter that the nation has ever seen.

Six Week Strike Would Hardly Affect Third Quarter

Gross National Product



Source: First quarter, Department of Commerce. All others estimated by STEEL.

Steel Talks: Little Headway Reported

MORE OF THE SAME occurred last week in the steel parleys—talk.

In the unlikely event that we get a peaceful settlement, it will probably come only if the union does an about-face and agrees to some of the eight proposals made by the steel companies to achieve greater efficiency. Steelworker President David McDonald had earlier rejected them all.

• **6-Cent Offer by Companies?**—Mr. McDonald intimated that the companies hinted they would accept a 2 per cent boost in employment costs if the proposals were accepted. That would be a little more than 6 cents an hour, but the USW president claims the proposals would save the companies "$2 an hour and wipe out gains made in the last 18 years."

The eight proposals:

1. Modify ambiguous and restrictive language to facilitate operating improvements.
2. Reinforce the contract prohibitions against wildcats, slowdowns, and picketing.
3. Recognize the functions of management to develop incentives and establish sound standards.
4. Clarify the right of the companies to change work schedules.
5. Tighten vacation provisions.
6. Eliminate overlapping or duplicated benefits.
7. Simplify seniority procedures.
8. Generally clarify contract language to develop better understanding and co-operation among the working force.

A strike at American Smelting & Refining Co.'s Tacoma, Wash., refinery was ended June 16. Word was received too late to change that listing in the table on Page 52.

Depreciation Reform in '60?

Two moves may spur action next year, but hopes fade for legislation now. The U. S. Chamber of Commerce canvasses opinion and Treasury surveys 2500 businessmen

TWO MOVES by industry and government may give a definite answer to the question: What kind of depreciation reform do businessmen want?

The answer will help bring us reform, perhaps in 1960. As Congress struggles to adjourn by midsummer, hope for action this year is practically nil. A major reason for lack of comprehensive reform is industry's lack of agreement on what should be done.

• **STEEL Leads Way**—STEEL's survey of 918 executives (Mar. 2, p. 69) showed metalworking is sharply divided on four or more methods of reform. The Treasury Department has just started an even broader survey to find out what businessmen in all industries want. Some 2500 questionnaires have been mailed to learn what present depreciation practices are and to discover what would be more helpful for American business.

On June 11, the U. S. Chamber of Commerce held the first meeting of trade association, accounting, legal, and business executives to find out the consensus on depreciation reform. One or two more sessions are scheduled.

• **Aiming for Nov. 2**—The chamber meeting, chairmanned by Joel Barlow, Washington lawyer, was called to help the organization prepare testimony for the House Ways & Means Committee hearings scheduled to begin Nov. 2. The tax writing unit of Congress will survey our whole tax system, including depreciation. Findings gleaned from the Treasury questionnaire should also guide the committee.

America's system of tax depreciation is based on a schedule of useful lives that hasn't been modernized since 1942. It places a heavy burden on most equipment owners in writing off their capital assets for tax purposes. The average life allowed on machinery is 20 years, even though much of it becomes economically, if not physically, obsolete in a far shorter period. What's more, our tax laws make no provision for inflation. Those of most other industrial nations do.

• **The Four Depreciation Reforms**—None of the major proposals had the majority's backing in STEEL's survey. But the most popular approach was the bracket system (STEEL, Mar. 16, p. 66). Others were fast writeoff at triple the standard rate (Mar. 23, p. 72), reinvestment depreciation (Mar. 30, p. 54), and a higher initial writeoff (Apr. 13, p. 58).

NAPA President Hits Commercial Bribery

"THE NATIONAL Association of Purchasing Agents is absolutely opposed to commercial bribery—no matter by what name or under what circumstance it may come."

So says Gordon Burt Affleck, retiring president of NAPA and purchasing agent for the Church of Jesus Christ of Latter-Day Saints. He's succeeded as president by Thomas O. English, general purchasing agent for Aluminum Co. of America (see picture).

• **Answers Charges**—In answering criticisms in the press and over television and radio about bribes and gifts, Mr. Affleck pointed to NAPA's fifth of ten standards for purchasing practice: "To subscribe to and work for honesty and truth in buying and selling and to denounce all forms and manifestations of commercial bribery."

Mr. Affleck urged that whenever a violation of that standard is reported, these steps be taken by local purchasing organization officers:

1. Get the details accurately and completely.

2. See if the party concerned is a member of NAPA.
   a. If so, ask him to desist and square up with NAPA policy.
   b. Put him on probation so far as the association is concerned.
   c. Give him full membership again if and when he gets in line.
   d. Ask for his membership if he fails to comply.

3. Point out to the news media that the offender is not a NAPA member, if that's the case. Emphasize to the news media NAPA's policy on bribery.

• **If Offered a Bribe**—What should the buyer do if offered a commercial bribe? Send it on to the agent's principal, answers Mr. Affleck. "We're still called purchasing agents. An agent, acting for his principal, will make certain that all benefits, gratuities, gifts, and the like will go to the principal. Let it be known that if the offerer wants to give anything, it should come to your principal as a reduction in price or an increase in service."

THOMAS O. ENGLISH
New President, NAPA

Labor Unions Struggle to Organize

Labor's argument: Big gains when it's the bargaining agent, as at Chrysler whose whitecollar people were organized in 1942

	1959	1942
Junior clerk	$358.92	$90.00
General clerk (Grade 1)	419.62	145.00
Comptometer operator	403.98	117.50
Key punch operator	419.62	90.00
Telephone operator	378.92	106.50

Note: Fringes granted include cost of living increases, Supplementary Unemployment Benefits, pensions, longer vacations, and hospitalization.
Source: UAW.

THE UNIONS are not having much success in regrouping their forces for a new attack on whitecollar recruiting problems. The latest effort came June 4 in Washington. Ten unions sent representatives to a meeting of the "Committee on Problems of Professional and Technical Workers" of the AFL-CIO's Industrial Union Department.

Purpose: To come up with a "program of action" to aid unions affiliated with the AFL-CIO in their recruiting. Behind the scenes, union leaders were trying to find the answer to a more basic problem: How to keep the large industrial unions from stealing whitecollar members from groups like the Office Employees International Union (which recruit only among the whitecollar class).

• **Action Timetable**—Here's what the unions present at the IUD meeting agreed to do: 1. Sponsor an "educational institute" to train recruiters in whitecollar job problems. 2. Analyze contracts covering whitecollar workers, to spot any uniformity. 3. Set up a legislative program (state and national level) that all unions can back. 4. Write material on "how professional and technical employees have gained from collective bargaining without detriment to their professional or job status." 5. Distribute the results of the program among potential union members and interested affiliated unions for their use.

The program appears to be more formidable than it actually is. STEEL learned at AFL-CIO headquarters in Washington that the confederation has never had any central disbursing office for material on whitecollar worker problems. The June 4 meeting will not change the situation. Says Al Whitehouse, IUD director: "The department's activities will be limited to aiding its affiliated unions in meeting the challenge arising from the growth of the nation's professional and technical jobholders." In other words, each union will continue to go its separate whitecollar way. Insiders report heated discussions between whitecollar and industrial unions at the meeting, but no wise man could come up with a solution for dividing the pie. As an industrial union source concluded: "We have no battle plan."

• **Industrial Union Needs** — It might be said the industrial unions need the whitecollar worker worse than he needs a union. In the search to recoup losses in membership (STEEL, Apr. 13, p. 51), the United Steelworkers, United Auto Workers, even the United Mine Workers, cast envious eyes at the fast growing whitecollar class. The U. S. Labor Department says the nation will need 1.7 million more professional and technical people by 1965 than in 1955 (a 37 per cent increase) and 2.3 million more clerks and salesmen (a 27 per cent increase). The AFL-CIO is well aware that "professional, technical, and kindred employment" has grown 39 per cent in the last seven years.

The Bureau of Labor Statistics figures there is a potential of 15 mil-

Metalworking's Whitecollar Workers

Management's Rebuttal: Many whitecollar people don't like unions, as is the case with these engineers

50 %	strongly opposed
23 %	mildly opposed
11 %	mixed emotions
2.5 %	mildly in favor
5 %	strongly favor
8 %	Prefer society action

Based on 277 interviews with nonorganized professionals in eight manufacturing plants and two public utility companies.

lion union members in the whitecollar class, including about 4.5 million professional, semiprofessional, and technical workers, 7 million clerks, and 3.5 million salesworkers. About one-sixth, or 2.5 million, of these salaried employees belong to unions.

A Labor Department source believes that figure has been static for the last two years, perhaps has even declined a little. (No official BLS estimate for 1959 is available.) That fact, coupled with the trend to automation, worries the unions. Like a manufacturer seeking new markets for old products, they have attempted to extend themselves geographically (the South) but have met with little solid success. One possible approach: Dress up the product in the form indicated by the IUD conference to find new customers in markets already well tapped.

• **Why?** — But success won't be easy, says the Labor Department source. He has noted no significant National Labor Relations Board election victories in the last few years and counts the June 4 meeting as little more than face saving. "The unions, especially the industrial ones, can talk themselves blue in the face, but they are going to get nowhere important in their efforts to gain more whitecollar membership," he says. Why not? "In the first place, employers are learning more every day about dealing with whitecollar folks. For example, a smart boss can, with a little tact, cause the office people to identify themselves with management. Secondly, industrial unions generally don't understand how to appeal for whitecollar membership. Bluecollar strategy rarely works on whitecollar workers."

Strictly whitecollar unions also have their problems. Small offices are particularly difficult to organize because of the proximity to the boss. Women are generally harder to organize than men because of their turnover rate. Finally, many whitecollar workers are getting bluecollar fringe benefits without joining unions because management feels responsible for seeing that union members do not get more benefits than nonunion people. The Labor Department source sums up: "The unions have made bold statements for a decade. In only a few cases, have their challenges to management in the whitecollar field been legitimate. Usually, they are just talking for themselves, not for the whitecollar employee."

• **The Organized**—This estimate is borne out by these figures for metalworking employees: Only about 60,000 engineers, scientists, architects, and draftsmen are unionized, says BLS.

Only 14 per cent of the officeworkers are in unions, while membership among manufacturing clerical employees runs about 15 per cent. USW claims 20,000 of its 1.25 million members are whitecollar people, although the figure does not account for many agreements with fabricators where there is no breakdown between clerical and production workers. A source at

union headquarters described its efforts with whitecollar folks as representing only a "modicum of success."

The UAW claims 65,000 whitecollars among its 1.14 million members. About 50 per cent are at Chrysler, 30 per cent at Curtiss-Wright, and 20 per cent at International Harvester. The union employs seven full-time organizers for its whitecollar program. A union official reports he is "encouraged" at the progress being made, although it is "slow."

• **Basic Argument**—How do the unions get what whitecollar members they have? This sales pitch is common: "You work under office rules which can be changed overnight at a whim. You need the security of union membership."

The chance of losing a job via the installation of automated equipment is becoming increasingly important to officeworkers. Here's a typical clause from a whitecollar agreement signed by a large metalworking company: "When the installation of mechanical or electronic equipment will have an effect on the job status of employees, management shall review the matter with the local union grievance committee in advance of such installation. In the event such mechanical or electronic equipment is installed, management shall provide reasonable training arrangements for the employees affected (so they) may have an opportunity to become qualified for available jobs."

• **Summary**—You have one great advantage in jousting with unions for the loyalty of whitecollar people—few want to be organized. But that advantage can vanish if you deal carelessly with problems like office automation or if you don't understand the whitecollar attitude toward unionization. For a clue about how one group of whitecollar people, engineers, feels about the situation, see the following story.

HUGE BUTTERFLY VALVE for the Ice Harbor dam on the Snake River in Washington is automatically welded to insure perfect performance and long life. Stainless steel seat rests on rubber seals in valve port. Gantry welder and positioner combine to produce a more uniform, sounder weld

Most Engineers Oppose Unions

MOST ENGINEERS and scientists prefer to stand on their own feet when it comes to getting a raise or a better job. If you sense strong dissatisfaction among your professionals, you'd better overhaul your labor relationships and salary practices. A University of Michigan survey indicates the most critical areas that could cause engineers to seek collective bargaining.

Summarizing his study, Dr. John W. Reigel, director of Michigan University's industrial relations bureau, asserts: "Engineers and scientists essentially are innovators and discoverers in the material realm. The true professional feels an obligation to exercise a high order of self-discipline and personal responsibility in the practice of his profession. His fellows expect him to protect its good name and standing at all times."

• **Why Against Unions?**—Engineers are generally against unions because they can lead to: Lack of independence, reduction of merit raises, stagnated professional development, and establishment of restrictive working regulations. They're also concerned because they feel unions would create barriers between them and management, would degrade their professional status, and might involve association with corrupt labor bosses.

Listen to what they say: "Anyone who professes to be an engineer should be strong enough to take care of himself. He doesn't need a union to do this for him." . . . "Creative effort cannot be organized or evaluated in terms of union rates. I can't see what standards could be used for bargaining purposes with the many different types of specialties involved in engineering work."

• **Societies Can't Help**—In keeping with their status, some engineers would like to see more efforts by the professional societies to establish job standards and salary rates. Such boosters include some of the top professionals, not just the laggards

or less competent men. Says one: "In Ontario, the Association of Professional Engineers recommends salary levels and describes various categories of engineering by years of experience and types of work. This is a good system."

Dr. Reigel doubts that society action will work because societies are composed of different groups of professionals such as students, managers, public employees, as well as those who are working in industry. A collective bargaining attempt probably would cause factional discord and seriously weaken these organizations, he declares.

• **Check Yourself**—To avoid dissatisfaction that opens the door to organized labor you'll want to check your practices against three pitfalls engineers feel rob them of status.

1. **Salaries Out of Scale**—Engineers have a habit of comparing their incomes with those of doctors, lawyers, and skilled workers instead of against other engineers in the same sort of business. Suggestion: Make sure your salaries are in line, then explain the scale to your professionals. This may help overcome another chronic complaint—the shrinking margin between older engineers' salaries and higher starting pay for newcomers.

2. **Impersonal Management**—"A lot of the troubles with engineers comes from impersonal management and its failure to recognize them as professionals. At this company," charges one interviewee, "engineers have to line up at the pay window along with hourly employees. If engineers become unionized, it will be strictly a protest move." Suggestion: Free engineers from routine tasks; give them more responsibility; explain why some company policies are necessary (see STEEL, Apr. 21, 1958, p. 67).

3. **More Management Identity**—Underlying the survey results is the feeling that engineers often resent the fact they aren't given more opportunities to offer advice or be informed of management problems and plans. Suggests one professional: "Contact between a professional group and management on a discussion plane would be good for a better mutual understanding, but there should be no coercion of management by professional groups."

National Wins Dunes Battle

Portage Township, Ind., votes to incorporate as a town, giving steel firm the go-ahead to build a $100 million mill

PLANS TO BUILD a $100 million finishing mill in the Indiana dunes area will be carried out by Midwest Steel Corp., a subsidiary of National Steel Corp., Pittsburgh.

The action follows approval of a referendum by Porter County commissioners—on June 13 residents of Portage Township voted to incorporate as a town by a 10 to 1 margin. The commissioners also approved a zoning ordinance permitting heavy industry in unincorporated sections of the county.

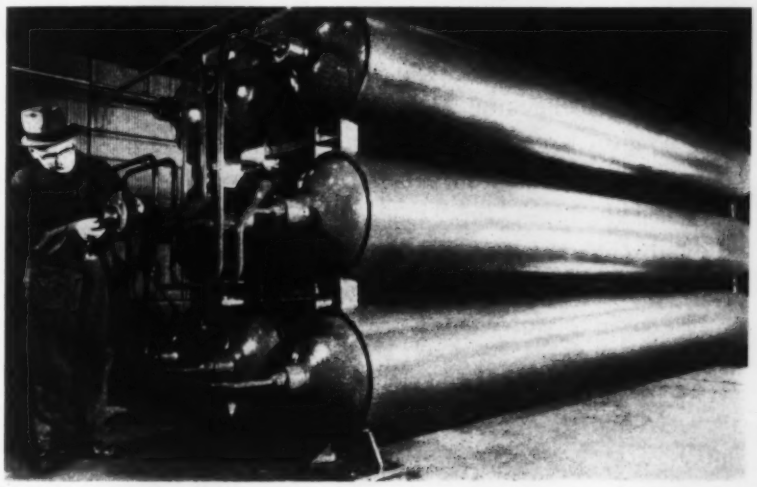
• **Ends Fight**—The move, climaxing several months of hassling, was interpreted by Albert J. Berdis, Midwest president, as "giving the needed clearance to build a Midwest Steel Corp. plant." "We expect to proceed in that direction at the earliest possible date," added Mr. Berdis. Some sources report ground breaking may start as early as July 1.

Industry minded Porter County thus overrode the objections of tiny Ogden Dunes, Ind., and Sen. Paul Douglas (D., Ill.). They wanted the area preserved as a park and had attempted several measures to prevent the steel industry from moving into the region. The senator still has a bill before the Senate, (S. 1001) which would make the area a national park. Its chances for passage are apparently nil. Many Indiana state officials, led by Gov. Harold Handley, a Republican, favor industrialization of the area.

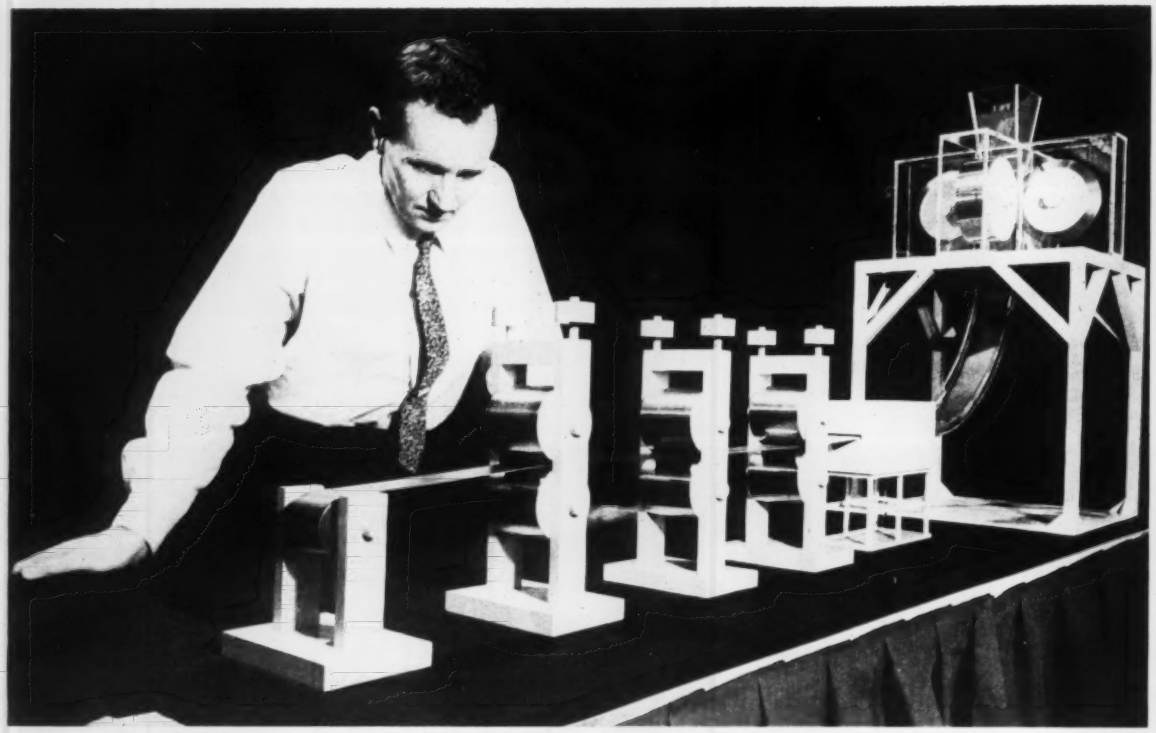
The door to expansion is now opened to Bethlehem Steel Corp. and Inland Steel Co. which also own land in the dunes country. Neither firm has disclosed plans for developing their properties.

• **The Plant**—The Midwest facility will include a tin plate line, galvanizing line, hot and cold rolled lines, and supplementary equipment for the production of electrolytic tin plate, galvanized coils, and hot and cold rolled sheets and strip. The nonintegrated operation will have an annual finishing capacity of 840,000 tons. Prime customers will be food processing industries in the Chicago area.

Semifinished steel is to be shipped to the plant by rail or water from National's Detroit subsidiary, Great Lakes Steel Corp.



HIGH PRESSURE TANKS containing helium, nitrogen, and oxygen will force liquid fuel into Atlas missiles and purge fuel systems after launchings. Vessel walls are made from solid alloy steel billets at Christy Parks Works, National Tube Div., McKeesport, Pa., United States Steel Corp. They're 5 to 26 ft long, designed for pressures up to 8800 psi



Model shows how strip steel is made from iron powder without melting. Powder is funneled into four rolls (upper right), and compressed into a semisolid strip. A furnace heats and deoxidizes the material; hot-strip rolling stands reduce it to desired thickness and give it the right density

Republic Scores in Direct Reduction

Process developed by Republic Steel Corp. would reduce capital equipment and operating costs by eliminating coke ovens, blast furnaces, open hearths, and blooming mills. Highly purified ore is reduced to metallic iron and rolled into a semisolid strip. The material is then heated to 2200° F in a reducing atmosphere and passed through a series of hot-strip stands to give it the right gage and density. The company plans to do further research on the process in a pilot plant, where full-scale production problems can be solved

A MAJOR breakthrough in direct reduction is announced by Republic Steel Corp., Cleveland. The company is producing strip steel from iron ore, without melting, at its new research center in Independence, Ohio.

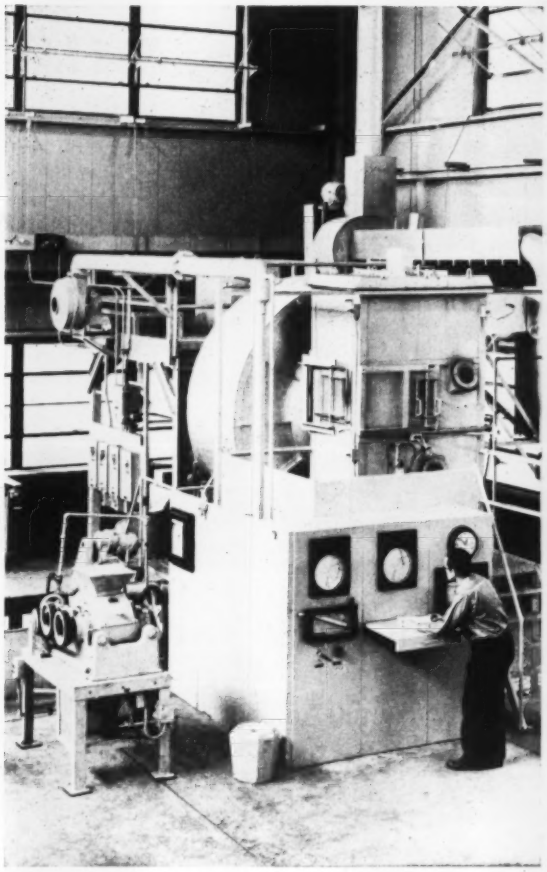
The process bypasses coke ovens, blast furnaces, open hearths, and blooming mills. It could reduce capital equipment and production costs while producing steel as good as that made by conventional methods, says Peter Robertson, vice president, research and planning.

• Ore is purified and reduced to iron powder. Rolling, heating, and further reduction complete the process.

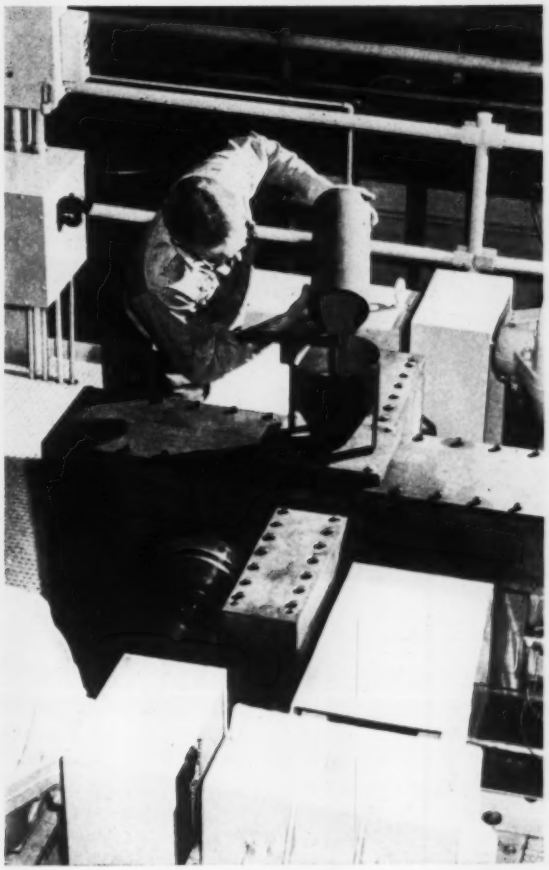
Iron ore is highly purified and reduced to metallic iron powder. Then it's funneled between four rolls, where it's compressed into a semisolid strip.

The material passes through a furnace (where it's heated to 2200° F in a reducing atmosphere) and a series of hot-strip stands. Hot rolling reduces the strip to desired thickness and gives it the right density.

Hot coils are of the same quality as conventionally made ones. They're pickled, cold rolled, and annealed, then recoiled or cut into



Ores are heated with coke fines in this equipment and reduced to metallic iron. The product is later made into iron powder for pressed metal products



In a laboratory run, highly refined metallic iron powder is poured into a funnel and fed through rolls which compress it into a semisolid strip

sheets. The metal has good drawing characteristics, with satisfactory resistance to tearing or cracking.

• All work has been in the laboratory. Next: Pilot plant production.

The company has produced more than 1800 lb of steel in the laboratory. A spokesman expressed confidence in commercial application of the method. But further research will be necessary. A continuous pilot line will handle larger quantities of raw materials and permit solution of many full-scale production problems.

• Powder metallurgy and direct reduction aren't new at Republic.

Steelmen have been intrigued with direct reduction for years; a number of processes show promise.

A direct reduction plant was built by Republic Steel during World War II at Warren, Ohio. It made electric furnace charge material from iron ore, using coke oven gas as a reducing agent.

Later, the company experimented with chemical purification and direct reduction to beneficiate low grade ores at a pilot plant in Cleveland. Findings encouraged the company to build a commercial iron powder plant at Toledo, Ohio, in 1955. The product is used to make mechanical parts by pressing and sintering.

In 1957, Republic Steel Corp. and National Lead Co. formed R-N Corp. Its product: Melting stock, made by direct reduction of iron ore, to replace scrap or hot metal in steelmaking.

• Work at Republic's new research center will include short range and pure science projects.

Metallurgy, processing, new products, and ceramics will be investigated at the new $5 million facility, says T. F. Patton, president. Budgets and schedules are planned for immediate and long range returns.

About 30 per cent of the budget will be applied to projects promising results in one to three years. A similar amount will finance projects on a five year schedule. Another 30 per cent will cover long range projects. (Some may take more than ten years to pay off.)

About 10 per cent of the budget will finance pure science projects which have no immediate application but promise future benefits.

Nearing end of tour, Jim Sands answers . . .

How Good Is the WOC Plan?

DO WOC's live a life of leisure with lots of golf dates? Are late rising and the Washington social whirl part of the routine?

"No," flatly states Jim Sands of Eclipse Fuel Engineering Co., Rockford, Ill. Jim is a WOC (without compensation), one of the metalworking executives on six month leave from their jobs to advise the Business & Defense Services Administration on mobilization programs. He's heading home this month after a seven month tour of duty under Andy Olsen, chief of the Metalworking Division, BDSA.

Mr. Sands, who went to Washington to start the first mobilization study of industrial heating equipment by the agency, tells STEEL the WOC program is in good shape. "I'm enthusiastic about it," he continues. "And although the duty is no vacation, it's a real education."

From the solid base of an industrial background, the WOC can give government people counsel about his own industry, plus a better understanding of over-all management techniques. In return, he obtains a rare perspective of government-industry relations.

Two-Way Street

"A good WOC educates us in government," say Mr. Olsen. Counters Mr. Sands: "Businessmen must take these jobs and be sincere about their work to provide all government agencies with the continuous kind of contact with business that BDSA must make. Trade associations can't handle government-industry relations alone." The program doesn't end when the WOC goes home. Seven are retained on an intermittant basis by the Metalworking Division for advice on mobilization problems.

Improper Influence?

STEEL asked Mr. Sands if a WOC is able to influence government contracts in any manner. Answer: "A WOC divorces himself from his job for the tour. He has no personal ax to grind and sometimes finds himself recommending competitive equipment."

Both men appeared pleased with the present setup in which WOCs act strictly as advisers. When the program first began, they were division chiefs. Consequently, they didn't learn much or offer the government much help. They were too busy learning the ropes.

Advice to Future WOCs

Jim Sands has recommended his industry keep sending a man to Washington after he is gone.

Be prepared to put in a full day's work, he warns successors. Advising the government on industry problems, plus the time spent in learning the big picture of our defense and mobilization activities, may take more than six months. Many take a second tour.

How About Civil Servants?

"I came to Washington wet behind the ears," he comments. "I learned it's not all politics here. Back home, many of us complain about huge government spending programs. There's a need for some of it. At the same time, I'm not saying there isn't waste.

"I'm sure some government people could earn three times what they make now if they went into private industry. But many are dedicated to their work in the same manner as people in the teaching profession."

Is Washington a rat race? He didn't find it that way. "Of course, we don't come into contact with Capitol Hill. We are not policymakers, just advisers."

How about bureaucracy? "No so-called government bureaucrat has slowed down my work. Co-operation from government agencies has been good."

Jim Sands hopes the debunking of some bugaboos about Washington may serve to keep good people coming to Washington as WOCs.

Dr. Teller Hints at Future Nuclear Tasks

Dr. Edward Teller, "father of the H-bomb," and director of the University of California's Radiation Laboratory, would like to attempt several projects if he can get the financial backing: 1. Set off a nuclear explosion in an underground salt bed near Carlsbad, N. Mex., to make new isotopes. 2. Try to unlock oil from the tar sands of Atabaska, Canada, with nuclear shots while the ground is frozen. 3. Use nuclear energy to free oil from the shale in the Green River region of Colorado and Utah. 4. Use the H-bomb to utilize wasted desert water. Dr. Teller reports that the government is studying the feasibility of digging (with atomic power) a giant harbor on the northwest tip of Alaska.

Tested like a patient's heartbeat and blood pressure in surgery...

View of Loewy high-pressure vessel showing pressure cylinder withdrawn for loading

THIS HUGE pressure vessel—believed to be the largest ever built—was conceived for the extremely high operational requirements of 30,000 psi and test pressure of 45,000 psi.

Designed and built by Loewy-Hydropress Division of Baldwin-Lima-Hamilton for the United States government, this unusual piece of equipment required an elaborate testing procedure comparable in precision to the observation of a patient's heart during a surgical operation.

More than 80 SR-4® strain gages, products of B-L-H's E&I Division, were located at all critical points of the structure. Over 1500 readings were taken of the strains and stresses developed during loading the vessel up to 45,000 psi and down again.

Measurements obtained during this procedure were used for both the analytical computations and the graphical plotting of stress-strain diagrams required to describe the successful acceptance tests.

Fabrication and testing were performed entirely at B-L-H's Eddystone Division—another demonstration of the integrated inter-divisional facilities of the Baldwin-Lima-Hamilton Corporation.

Loewy coordinates the teamwork of its B-L-H fellow divisions in many technical fields. For creative engineering, research and development in the area of high-pressure hydraulics, direct your inquiries to Loewy-Hydropress Division, Dept. B-6.

Loewy-Hydropress Division

BALDWIN · LIMA · HAMILTON

111 FIFTH AVENUE, NEW YORK 3, N.Y. Rolling mills • Hydraulic machinery • Industrial engineering

BALDWIN BLH LIMA-HAMILTON

"WEIRKOTE WON'T PEEL OR FLAKE—AND CAN END THE NEED FOR FURTHER CORROSION PROTECTION AFTER FABRICATION."

Q. A zinc-coated steel sheet that won't peel or flake, even under the severest fabricating stresses?

A. Precisely. Weirkote's made by a continuous process. The zinc is so integrated with the steel that even the toughest "torture" tests of fabrication leave that bonded coating intact. You can work Weirkote to the very limits of the steel itself!

Q. Our products are pretty intricate—take lots of flexing, crimping and so on. What about those hard-to-reach places?

A. Weirkote's zinc coating is so uniform—protects even the most complicated parts.

Q. So with Weirkote you bypass the need for further corrosion protection?

A. You get the picture! Think of the time, labor, space—the costly capital outlay—you save. Better steel products at far lower costs—that's Weirkote for you!

Send for free booklet that details the time-and-cost-saving advantages of skin-tight zinc-coated Weirkote. Just write Weirton Steel Company, Dept. B-2, Weirton, West Virginia.

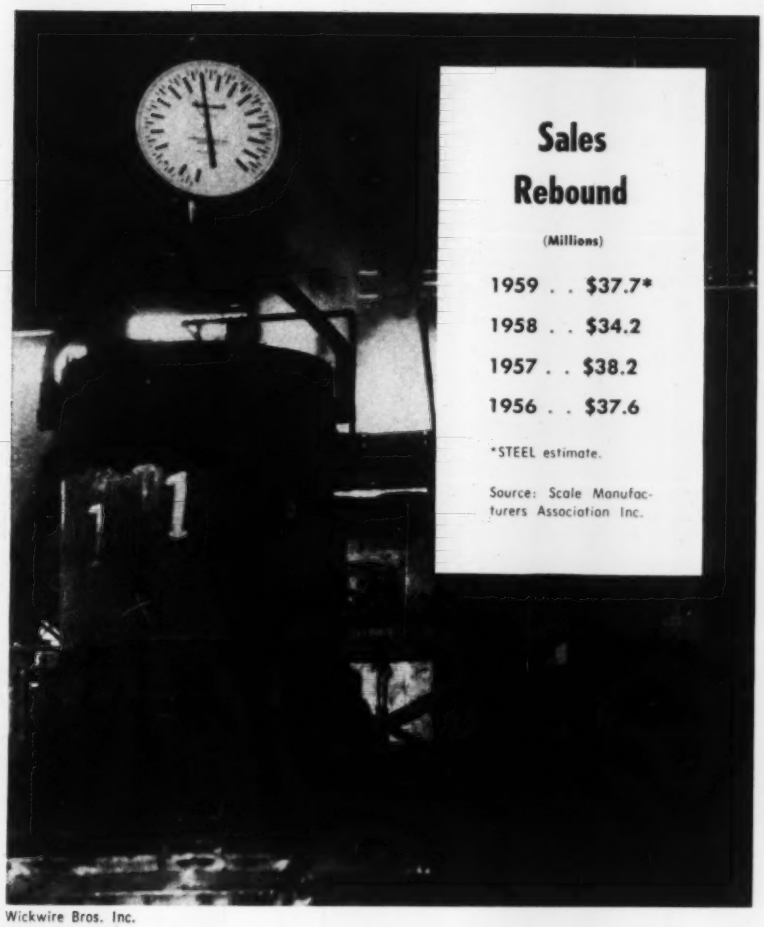
WEIRTON STEEL COMPANY

WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

a division of

NATIONAL STEEL CORPORATION



Wickwire Bros. Inc.

Scale Orders Gain Weight

SALES OF industrial scales so far in 1959 are running 10 per cent ahead of last year's. Some manufacturers queried by STEEL think the increase may go as high as 25 per cent for the year.

Automation should be a boon to many scalemakers (there are about 80 of one type or another). Their operations are keyed to new applications; equipment replacement is of minor importance.

Increased use of conveyor belt weighing for free-flowing bulk materials is found with in-plant operations. ABCs Scale Div., McDowell Co. Inc., Cleveland, says customers report 15 to 17 per cent greater efficiency, lower maintenance costs, improved quality control, and less manpower in mills fed by automatic weight control systems compared with volumetric mill feeding.

• **Prices**—They've held up fairly well despite some cutting. Some respondents indicate they are contemplating a 10 per cent price increase this year.

• **Imports**—Some scales are coming from Britain, Germany, and France. They undersell comparable domestic equipment by as much as 25 per cent (delivery charges included). But hard sell and high quality products have kept U. S. firms from worrying too much about foreign competition.

This country is presently the largest exporter of scales. Exports are running 52 per cent ahead of those in 1954.

• **Standards**—Uniformity is lacking in state weight and measure laws. That creates confusion, states Martin-Decker Corp., Long Beach, Calif. STEEL's survey showed this complaint to be common among respondents. Too many weight inspectors are politicians; not enough are dedicated weight and measure men, declares Exact Weight Scale Co., Columbus, Ohio. The Scale Manufacturers Association Inc., the Bureau of Standards, and the National Conference on Weights and Measures are working to standardize regulations.

• **Education** — More publicity is needed to acquaint buyers with the importance of scales and the need to replace obsolete equipment.

Thayer Scale Co., Pembroke, Mass., says that too often a scale firm is consulted after a new plant or installation is ready to operate. The opportunity to rig a more modern and efficient system is lost. It suggests consultation well in advance to avoid mistakes.

• **Service**—Education of customers and servicing their needs seem to go hand in hand. Many service problems develop from improper care or neglect. Some distributors, such as Ohio Counting Scale Inc., Cleveland, check and adjust scales periodically for customers on a flat rate basis.

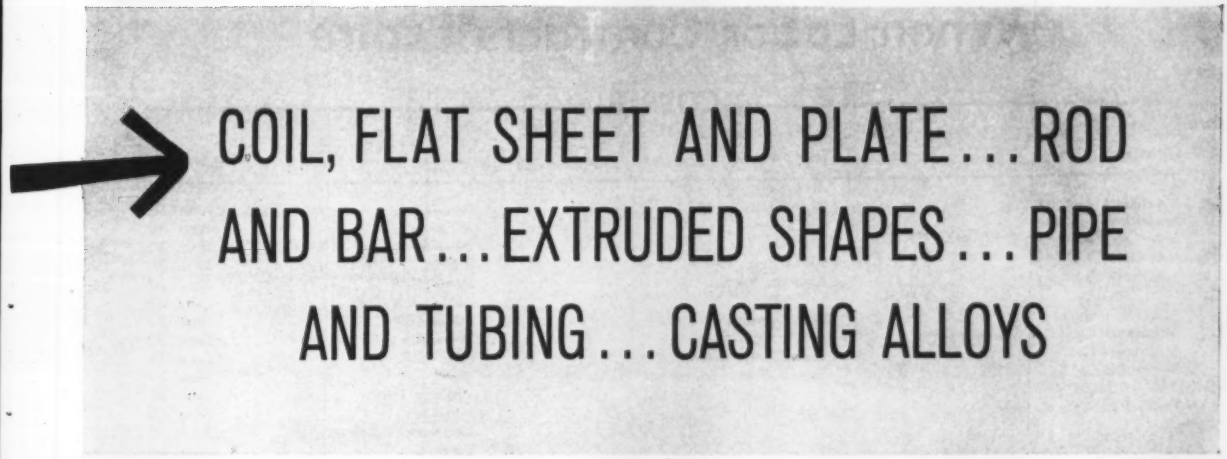
• **Electric Weighing**—Some firms report electric scales are taking up to 5 per cent of the market. Electric scalemakers are optimistic. Says one: "Electric weighing will account for 25 to 40 per cent of all tank, bin, hopper, platform, conveyor, and crane applications within ten years." Mechanical scalemakers don't agree with that forecast but concede electrical competition will mount. Biggest obstacle: "Inertia from old timers," says Gilmore Industries Inc., Cleveland. Cost is frequently prohibitive with installations of 1000 lb capacity or less.

• **Rentals**—Some scales are rented rather than sold, particularly for annual inventory taking, says Howe Scale Co., Rutland, Vt.

MAKE YOUR
OLIN ALUMINUM DISTRIBUTOR
YOUR METALS
SERVICE CENTER

Your Olin Aluminum Distributor can help you operate with minimum inventory (at a great saving of your own floor space). He stocks both ferrous and non-ferrous metals, and is ready to give you—

- **The fastest possible service**
- **Aluminum to meet your precise requirements**
- **Free extra storage space by minimizing your inventory**
- **Expert technical assistance**



DISTRIBUTORS COAST TO COAST

Mill Products Distributors

ALABAMA
BIRMINGHAM
Atlantic Steel Co.
4230 First Avenue, South
P.O. Box 3067
WOrth 1-2147

CALIFORNIA
LOS ANGELES 58
A. M. Castle & Co.
2200 E. 55th St.
LUdlow 9-6611

LOS ANGELES 22
Jones & Laughlin Steel Corp.
2131 So. Garfield Ave.
RAymond 3-4581

SAN FRANCISCO 19
A. M. Castle & Co.
P.O. Box 3453
ATwater 2-6920

FLORIDA
FT. LAUDERDALE
Caulley Steel & Supply Co.
1800 N.W. 22nd Street
P.O. Box 581
LUdlow 3-7650

MIAMI
Caulley Steel & Supply Co.
150 N.W. 73rd Street
PLaza 4-2754

ORLANDO
Caulley Steel & Supply Co.
1722 N. Mills St.
GArden 5-3528

GEORGIA
ATLANTA
Atlantic Steel Co.
575 - 14th St. N.W.
P.O. Box 1714
TRinity 5-3441

ILLINOIS
CHICAGO
A. M. Castle & Co.
3400 N. Wolf Road
NAtional 5-6411

CHICAGO 39
Guardian Aluminum Sales, Inc.
4944 W. Bloomingdale Ave.
NAtional 2-5808

CHICAGO 32
Lafayette Steel & Alum. Corp.
4100 S. Karlov Ave.
LAfayette 3-7632

LOUISIANA
NEW ORLEANS 9
Woodward Wight & Co. Ltd.
451 Howard Ave.
P.O. Box 370
TUlane 2471

MARYLAND
BALTIMORE 11
Brass & Copper Supply Co., Inc.
501 W. 23rd St.
BEImont 5-1500

BALTIMORE 24
A. M. Castle & Co.
P.O. Box 5295
DIckens 2-4000

MASSACHUSETTS
BOSTON 10
Kelco Metal Products Co.
51 Sleeper Street
HUbbard 2-1737

WORCESTER
Kelco Metal Products Co.
61 Milton Street
PLeasant 3-7625

MICHIGAN
DETROIT 34
Production Steel Products Inc.
20001 Sherwood Ave.
TW. 3-5000

MINNESOTA
MINNEAPOLIS 14
Keelor Steel, Inc.
909 9th St. S.E.
FEderal 3-4291

MISSOURI
NORTH KANSAS CITY
A. M. Castle & Co.
1 W. 10th St.
GRand 1-3666

NEW JERSEY
NEW BRUNSWICK
Morrison Steel Co.
475 Jersey Avenue
P.O. Box 350
CHarter 7-8400

NEW YORK
BUFFALO 17
Seneca Steel Service Inc.
1050 Military Road
Riverside 7920

NORTH CAROLINA
CHARLOTTE 1
Brass & Copper Supply Co. of Carolina
700 W. 5th St.
FRanklin 5-5508

OHIO
CLEVELAND 13
Midwest Aluminum Supply Corp.
2530 W. 3rd St.
PRospect 1-6595

CLEVELAND 5
The Universal Steel Co.
6600 Grand Ave.
VUlcan 3-4972

OKLAHOMA
OKLAHOMA CITY
McCormick Steel Co.
2101 So. Villa
P.O. Box 1234
MElrose 4-1492

PENNSYLVANIA
PITTSBURGH (McKees Rocks)
Follansbee Metals Div.
Excel Steel Co.
200 Bradley St.
FEderal 1-8200

PHILADELPHIA 31
North American Brass & Copper Inc.
1580 N. 52nd St.
TRinity 8-5300

TENNESSEE
KNOXVILLE
Steel Supply Co.
Beverly Road
MYrtle 1-1163

TEXAS
DALLAS
McCormick Steel Co.
11815 Denton Drive
P.O. Box 14224
CHapel 7-3104

HOUSTON
McCormick Steel Co.
1110 Lockwood Drive
P.O. Box 1756
ORchard 2-6671

LUBBOCK
McCormick Steel Co.
Plainview Highway
P.O. Box 1182
POrter 2-8793

WASHINGTON
SEATTLE 4
A. M. Castle & Co.
3660 E. Marginal Way
MAin 3-0565

Distributor to Mobile Homes Industry

CALIFORNIA
EL MONTE
Alu-Metals Supply Corp.
2450 No. Rosemead Blvd.
GIlbert 3-2568

ILLINOIS
CHICAGO 7
Kochton Plywood & Veneer Co.
509 W. Roosevelt Rd.
TAylor 9-0800

Casting Alloy Distributors

ALABAMA
ANNISTON
E. A. Draper Metals, Inc.
330 S. Noble St.
ADams 7-3585

CALIFORNIA
LOS ANGELES 23
McGowan Co., Inc.
1205 South Boyle St.
ANgeles 3-7575

OAKLAND 20
Globoloy Metals Inc.
1820 - 10th St.
HIgate 4-7249

DELAWARE
WILMINGTON 99
North American Smelting Co.
Marine Terminal
OLympia 4-9901

MISSOURI
KANSAS CITY 26
Atlaw Distributing Co.
1601 Crystal Ave.
CHestnut 1-1337

NEW YORK
BROOKLYN
Henning Brothers & Smith, Inc.
91 Scott Ave.
HYacinth 7-3470-1-2

OHIO
CLEVELAND 13
Midwest Aluminum Supply Corp.
2530 W. 3rd St.
PRospect 1-6595

OLIN ALUMINUM®

OLIN MATHIESON • METALS DIVISION • 400 PARK AVENUE • NEW YORK 22, N. Y.

When Labor Contracts Expire

COPPER

Company	Location	Union	Expiration Date
American Smelting	Perth Amboy, N. J.	Mine-Mill	June 30
American Smelting	Baltimore	Mine-Mill	June 30
American Smelting	El Paso, Tex.	Mine-Mill	June 30
American Smelting	Silver Bell, Ariz.	IBEW	June 30
American Smelting	Tacoma, Wash.	Mine-Mill*	June 30
		AFL Office Emp.	June 30
Anaconda Co.	Butte, Mont.	Mine-Mill**	June 30
Anaconda Co.	Anaconda, Mont.	Mine-Mill	June 30
Anaconda Co.	Great Falls, Mont.	Mine-Mill	June 30
Anaconda Co.	Butte, Anaconda, Great Falls	IBEW	June 30
		Various Trades	June 30
Inspiration Consolidated	Inspiration, Ariz.	Mine-Mill	June 30
		Engineers-Trainmen	June 30
		Various AFL	June 30
International Smelting	Miami, Ariz.	Mine-Mill	June 30
		IAM	June 30
		Various Trades	June 30
International Smelting	Tooele, Utah	Mine-Mill	June 30
Kennecott	Ruth, Nev.	Mine-Mill	June 30
Kennecott	McGill, Nev.	Mine-Mill	June 30
Kennecott	Hurley, N. Mex.	Mine-Mill	June 30
Kennecott	Bingham, Utah	Mine-Mill	June 30
Kennecott	Magna, Utah	Mine-Mill	June 30
Lewin Mathes	St. Louis	USW	June 30
Magma	Superior, Ariz.	Mine-Mill	June 30
San Manuel	San Manuel, Ariz.	Mine-Mill	June 30
		Various Trades	June 30
Miami Copper	Various Divisions	Mine-Mill	June 30
Phelps Dodge	El Paso, Tex.	Mine-Mill	June 30
U. S. Metals	Carteret, N. J.	Mine-Mill	June 30
Phelps Dodge	Morenci, Ariz.	Mine-Mill	July 1
Phelps Dodge	Douglas, Ariz.	Mine-Mill	July 1
Phelps Dodge	Copper Queen Branch	Mine-Mill	July 1
Phelps Dodge	All Mine Locations	Railroad Workers	July 1
Calumet & Hecla	Calumet, Mich.	USW	July 21
American Smelting	Perth Amboy, N. J.	Operating Engineers	July 31
Kennecott	Garfield, Utah	USW	July 31
Kennecott	San Manuel, Ariz.	Mine-Mill	July 31
		BLFE	July 31
Phelps Dodge	All Mine Locations	Various AFL	July 31
Phelps Dodge	Long Island City, N. Y.	USW	Aug. 1
Pima Mining Co.	Tucson, Ariz.	Various Trades	Aug. 31
Phelps Dodge	New Cornelia Branch	USW	Sept. 1
White Pine	White Pine, Mich.	USW	Oct. 28
American Smelting	Perth Amboy, N. J.	UAW	Oct. 31
American Smelting	Silver Bell, Ariz.	UMW	Oct. 31
Nassau Smelting	New York	Mine-Mill	Oct. 31
International Smelting	Perth Amboy, N. J.	USW	Nov. 10
Reading Metals	Reading, Pa.	Steelworkers Federation	Nov. 10

ZINC

Anaconda Co.	Great Falls, Mont.	Mine-Mill	June 30
Anaconda Co.	Anaconda, Mont.	Mine-Mill	June 30
Bunker Hill	Silver King Mine	Mine-Mill	June 30
American Smelting	Amarillo, Tex.	USW	Sept. 30
American Zinc	Monsanto, Ill.	Chemical	***
New Jersey Zinc	Palmerton, Pa.	USW	***

LEAD

American Smelting	East Helena, Mont.	Mine-Mill	June 30
American Smelting	El Paso, Tex.	Mine-Mill	June 30
American Smelting	Leadville, Colo.	Mine-Mill	June 30
American Smelting	Selby, Calif.	Mine-Mill	June 30
American Smelting	Barber, N. J.	Mine-Mill	June 30
American Smelting	Omaha, Nebr.	Mine-Mill	June 30
American Smelting	Federal, Ill.	Mine-Mill	June 30
International Smelting	Tooele, Utah	Mine-Mill	June 30
Bunker Hill	Bradley, Idaho	Mine-Mill	June 30
St. Joseph Lead	Herculaneum, Mo.	Glassworkers	Oct. 31

*On strike.
**Jurisdictional dispute at company railroad.
***Contracts have expired but facilities operating.

Strikes Threaten Nonferrous Market

Contract deadlines are as ominous as they are in steel. If walkouts begin on June 30, and negotiations are as tough as preliminary talks have been, here's what to expect in the supply and prices of metals

THIS COULD be a year of wide scale labor troubles in the nonferrous industry. On June 30 contracts expire at 27 copper mines and refineries in the U. S. At least 20 other locations have contracts up for renewal between July 1 and Nov. 10 (see table).

Contracts at ten lead and five zinc facilities come up for negotiation between June 30 and Oct. 30.

Four brass mill contracts expire this month, four next month, and another 14 between June 30 and Oct. 31.

• **Strike Odds**—For the last few weeks management and the unions have had preliminary talks. Both sides have indulged in some tough talk, and indications of any kind of compromise are few. Insiders admit they don't know what will happen.

The International Union of Mine, Mill & Smelter Workers (largest in the nonferrous field) recently charged the copper producers with "dragging their feet" in current talks. The union says it is calling a meeting today to "assess developments" and to "take whatever action is necessary to achieve satisfactory settlements."

• **What's Wanted**—At its convention in March, the Mine-Mill union went on record as favoring several demands:

- Higher wages.
- Cost of living escalation clauses.
- Greater overtime pay.
- A 32 hour work week with no cut in takehome pay.
- Supplementary Unemployment Benefits.
- Increased severance pay, paid sick leave, improved holiday and vacation clauses.

From preliminary verbal salvos fired by other unions representing nonferrous workers, it looks as if their demands will be fairly similar.

Battle scarred labor relations men say the unions may not be satisfied with agreements comparable to those signed in 1956—those in lead and zinc called for a wage package of 26.7 cents an hour over a three year period—24 cents in wages, the remainder in fringe benefits. Copper workers made out a little better: They received a wage package of 32 to 33 cents an hour, 24 to 27 cents of it in increased wages, the remainder in fringe benefits.

• **Most Controversial**—This year the unions will be pressing for escalation clauses, SUB, and, to a lesser extent, for the shorter work week. The companies will fight escalation all the way. They won't be much more willing to grant SUB or make any substantial reduction in the workweek. Producers may be willing to sign shorter term contracts (one to two years) to beat the issues. The union stands a much better chance of getting modest wage hikes and some concessions in certain fringe benefits, say observers.

The United Steelworkers (most of whose contracts expire after the Mine-Mill's) will hold a conference sometime in July where "demands will be formulated." Union officials hint demands will parallel those made in steel. They might even be higher if the policy committee decides to "try and catch up" in the fringe benefit area (they're not too far out of line in copper but are behind in lead and zinc fields, says the USW).

If the unions decide to strike, they'll have these factors going for them: Demand is good; stocks of copper aren't too high; and lead and zinc companies could have trouble moving their stocks if transportation unions refuse to cross picket lines. If steelmakers aren't struck, demand from galvanizers may be strong enough to force the zinc people to settle.

On the company side: Producers' stocks of lead are still high—about a four months' supply. Zinc is near the two month level. July and part of August are traditionally slack periods for copper when fabricators shut down their plants for vacations. Mine-Mill is not a wealthy union and probably couldn't stand a protracted walkout.

• **Bluffing?**—With all the muscle flexing the unions have been doing, they've made fairly meek settlements with several companies whose contracts expired earlier this year. One lead company signed a two year contract calling for a wage boost of 4.75 cents an hour, some increase in incentive bonuses, and about the same fringe benefits. A brass mill signed for one year. It agreed to bump wages 7 cents an hour, increase fringes by 1.5 cents.

• **Steel Is Key**—It's unlikely there'll be many settlements until after steel signs. In fact, many metalmen believe nonferrous unions may keep working without a contract until the steel situation is cleared.

• **What to Expect**—Here's what you can look for in the way of availability and price if the nonferrous unions walk out.

If a copper strike should last more than a month, prices would go up enough to attract foreign metal. Producers' and customers' stocks should keep anyone from being hurt for several weeks. If a strike were to run longer, stepped up imports, more output from some secondary smelters, and increased production from nonstriking mines and refineries would help. But a shutdown of more than two months would undoubtedly cause a serious shortage in this country.

No shortage in lead and zinc is foreseen, with the possible exception of special high grade. Stocks are high, especially in lead, and not all mines and smelters would be struck. Plenty of idle capacity could be reactivated. If both steel and zinc settle without a strike, or if steel continues and zinc shuts down, the zinc price will rise.

It's hard to see the lead price being affected one way or the other by a strike. Lead will go the way of the general business activity—up.

ULTRA-MODERN TECHNOLOGY PLUS OLD-FASHIONED DEVOTION TO QUALITY IS THE SECRET OF HYATT SUPERIORITY

Other producers may boast equally elaborate electronic controls these days. But there is still no substitute for the tradition of craftsmanship which has made HYATT the most respected name in cylindrical bearings since 1892. *For maximum performance per bearing dollar, insist on . . .*

HYATT ***HY-ROLL BEARINGS*** **FOR MODERN INDUSTRY**

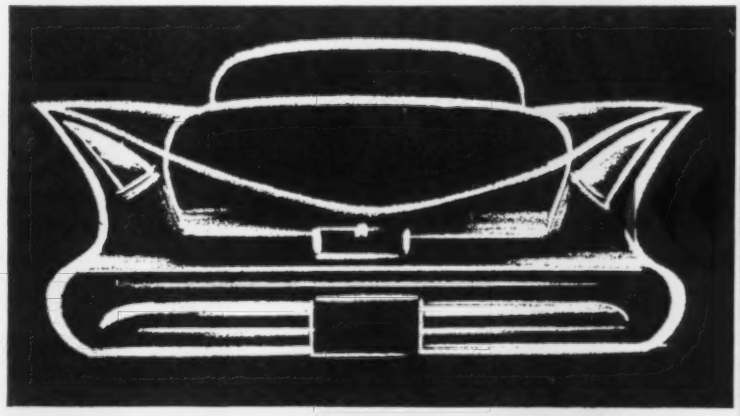
HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION • HARRISON, NEW JERSEY

Available through United Motors System and its Independent Bearing Distributors

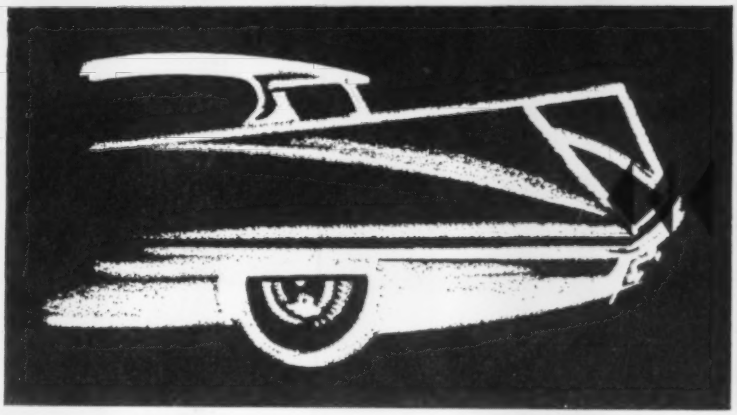
NO BEARINGS carry radial loads like cylindrical bearings . . . and NOBODY builds them like HYATT

New Models Ready For Pilot Runs

As STEEL Artist Sees Them



All Ford models will have Galaxie roof lines. Rear quarters will resemble the Falcon's styling theme



Dodge's Dart looks much like its experimental forerunner. It's built on 118 in. wheelbase

LATEST DOPE from Detroit indicates 1960 models will appear about the same time as last year's, possibly a bit later. Buick will be delayed. Ramblers will be earlier. Outstanding features will be GM's Slim Line transmission, Plymouth's six cylinder, overhead valve engine, and Chrysler's unitized bodies.

GM Standardizes

This will be the last year for GM's single body shell, say Detroit insiders. The word is that 1961 models will be built on two shells.

But the single body will continue for 1960. Each division's car will have fresh sheet metal, although not all lines are getting a complete face lift. More components will be standardized. Hardtops are all supposed to be 55 in. high. Here's the updated story, model by model:

• **Cadillac**—Rumors die hard, but Cadillac will not have a transaxle next year. Consequently, it won't have a rear mounted generator either. For 1960, GM's luxury line is refurbishing sheet metal to clean up its fin line.

The egg crate grille design will be continued, but it'll be modified to give a more massive appearance. Engines will be identical with the '59s. So will transmissions and axle ratios. Air suspension is being adapted to take advantage of improvements made this year by Oldsmobile (STEEL, June 1, p. 64).

• **Buick**—The silhouette is similar to that of 1959 cars. Bumpers are redesigned for a heavier look. The zinc diecast grille is continued.

Buick's triple turbine transmission is out, but regular Dynaflow will be available through 1960, say informants. After that, it may be ousted too. Body dimensions are about the same, but the floor pan has been dropped slightly so you can get into the rear seat easier. Engines and brakes are unchanged.

• **Oldsmobile** — New sheet metal below the belt line and a zinc diecast grille mark styling changes. Olds will be offering the Slim Line

(Material in this department is protected by copyright, and its use in any form without permission is prohibited.)

Hydra-Matic transmission that GM's announcing. The three speed job probably will be optional with the economy engine on the 88s.

• **Pontiac**—Victory Vs will be gone from Pontiac's rear quarters. A zinc diecast grille replaces the present aluminum job. The smaller Hydra-Matic will be optional.

Pontiac is experimenting with a central hydraulic system, but it won't be ready for 1960. What will appear are aluminum brake drums on some models. Like Buick, they'll be on front wheels only—may have metallic linings as a special option. Fuel injection will be available on top models only.

• **Chevrolet** — Sheet metal is changed below the belt line so rear fins won't appear quite so gull winged as this year's. The grille is changed, but it's still aluminum. The car reportedly is an inch or two longer and slightly wider. The floor pan has been lowered to give a larger seating package. Chevy will keep the optional four speed manual transmission. Fuel injection is still out. The Corvette has been restyled.

Ford Lifts Faces

Ford plans no major engineering changes for next year's big cars, but it is making extensive styling changes on two lines and will introduce a technical advance that promises to sweep the industry in a few years. Most of the company's 1960 efforts are aimed at its small car, Falcon.

• **Ford Div.**—The biggest styling change in the industry is supposed to show up in the Ford line. All new sheet metal gives it less pronounced blades that sweep into concave side panels. The round taillights, long an identifying mark, will be gone. Galaxie roof lines will be carried through all series. Station wagons and sedans will be built on the same 119 in. wheelbase, which is an inch longer than the '59s. The Fairlane is 213.7 in. long vs. 208 in. this year.

One change that will have far-reaching results: Teflon woven fabric on T-Bird joints. Reason: Eliminate lubrication. Metallic brake linings are supposed to be optional on the Bird.

• **Edsel**—In its last year as a big car, it will get few changes.

In '61, Edsel's name may be given to a second line of smaller cars that Ford is designing.

• **Mercury**—Fairly substantial sheet metal changes and swivel seats are Mercury's move. Side Vs have been considerably altered. Dimensions are about the same. Doors will be opening a bit into the roof line.

• **Lincoln**—Unitized bodies will be continued for 1960. Bumpers and grilles are redone, but basic styling stays the same. Front end sheet metal is new, to clean up the sculptured appearance around wheel housings. The Continental series will continue through 1960, but talk is strong that it will go in '61 if the T-Bird merges into Lincoln's lineup and Mercury shares the Ford Div. body shell.

Chrysler's Unitized

Imperial is the only car in the company that won't have a stub frame and unit body. Its sheet metal is little changed. But it will have the long awaited current alternator to replace the direct current generator. Another Imperial first: Electroluminescent lighting on instrument panels.

• **Chrysler, De Soto** — Except for minor sheet metal alterations and the unitized body, changes will be few. Torsion suspension continues. Basic engines are the same. De Soto will have fewer series, dropping from 13 to six or seven models.

• **Dodge**—Dart is Dodge's big pitch to keep it in the lower end of the medium priced cars. Styling is markedly different from that of other Chrysler cars. It will have crisper lines and virtually no chrome. The roof line is flatter and front end squarer than the experimental Dart, but rear quarter panels are almost identical.

• **Plymouth**—Chrysler's price leader will be about an inch longer but no lower. The unitized body, however, permits a slightly larger seating package.

Plymouth's six cylinder, overhead valve engine is the division's biggest announcement. Horsepower is around 120—lower than the present six cylinder. Displacement is pegged at 170 cu in. The engine is supposed to have a ram tube manifold. It will also be used in the Valiant and will be canted instead of mounted vertically.

U. S. Auto Output

Passenger Only

	1959	1958
January	545,757	489,515
February	478,484	392,132
March	576,085	357,048
April	578,825	316,594
May	546,817	349,613
5 Mo. Totals	2,725,968	1,904,902
June		337,446
July		321,017
August		180,447
September		130,460
October		261,701
November		514,152
December		593,920
Total		4,244,045

Week Ended	1959	1958
May 16	135,856	87,407
May 23	133,568	86,082
May 30	117,372	65,844
June 6	125,186	73,696
June 13	127,543†	78,163
June 20	128,000*	84,396

Source: *Ward's Automotive Reports*. †Preliminary. *Estimated by STEEL.

Rambler Remodels

American Motors Corp. has restyled its entire line with the exception of the 100 in. American, which is unchanged. Body shells are modified to bring car heights down to 55-56 in. All sheet metal is changed. Roofs are flatter, and the larger cars reportedly have reverse backlights. The cars are still compact, but styling reportedly is clean, and the bulky lines are eliminated.

Lark Springs for Rag Top

Two changes are due for Studebaker-Packard Corp.'s Lark. One is redesigning its manual transmission linkage. The second is the introduction of a convertible into the Lark lineup. A few trim changes mark the 1960 Larks from the '59s.

CASE HISTORIES

New Departure super precision angular contact bearings add new sales appeal to high frequency grinding spindles.

Photo: Courtesy Bryant Chucking Grinder Co., Springfield, Vermont

Ball Bearings Cut Costs $180.00 On 100,000 RPM Grinding Spindle!

CUSTOMER PROBLEM:

Machine tool maker experienced excessive assembly time with integral shaft type ball bearings in the production of 100,000-rpm grinding spindles for precision grinders. The ball bearing, with ground shaft serving as inner race, plus special balls, separator and outer race, required careful parts matching and assembly. Also, shaft and bearing replacement costs, if required, were high.

SOLUTION:

N/D Sales Engineer, in cooperation with the manufacturer, recommended using New Departure production ball bearings fitted directly to the shaft. These super precision, ultra high speed ball bearings eliminated the need for ball track grinding and delicate eccentricity matching at assembly. Using N/D ball bearings and engineering assistance, the manufacturer reduced parts and assembly costs $180 per unit. What's more, in the rare case of spindle damage, shaft assembly replacement costs have now been reduced $175 (over earlier models) . . . shaft assembly or bearings can be replaced separately, thanks to New Departure.

If you have new machine tool designs on the board, or are experiencing questionable costs in production, why not call on New Departure? There's probably a high precision N/D production ball bearing that can save you time or money! For more information, write Department T-6.

NEW DEPARTURE

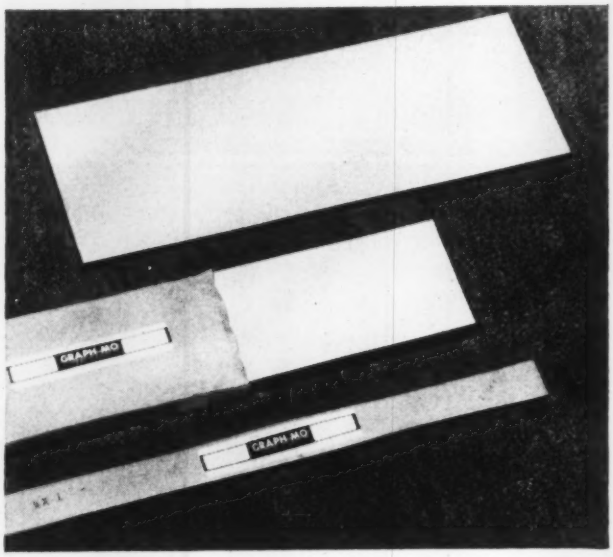
DIVISION OF GENERAL MOTORS, BRISTOL, CONN.

NOTHING ROLLS LIKE A BALL

New economy for tool steel users . . .

FAMOUS GRAPH-MO® NOW AVAILABLE IN PRECISION GROUND FLATS

. . . from 41 distributors in 33 cities



Now you can get precision ground flats with all the advantages of the Timken Company's famous Graph-Mo® tool steel. They're available through the conveniently located distributors listed below. You get all these advantages: *Semifinished* . . . saving preliminary machining operations. *Graph-Mo outwears ordinary tool steels 3 to 1* because of the combination of free graphite particles and diamond hard carbides in its structure. *Machines 30% easier* than conventional tool steels. *Uniform response to heat treatment* eliminates distortion. *Specially wrapped* in protective envelopes carrying heat-treating information. *And there are 250 sizes* of flats to choose from.

Get your stock list from our distributors or by writing direct. There is only *one* Graph-Mo, and the Timken Company makes it. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO". *Makers of Tapered Roller Bearings, Fine Alloy Steels and Removable Rock Bits.*

DISTRIBUTORS OF TIMKEN GRAPHITIC TOOL STEELS

ALABAMA
Birmingham—O'Neal Steel, Inc.

CALIFORNIA
Los Angeles—Coulter Steel & Forge Co.
Los Angeles—Earle M. Jorgensen Co.
Oakland—Coulter Steel & Forge Co. (Emeryville)
Oakland—Earle M. Jorgensen Co.
San Francisco—A. Milne & Co., Inc.

GEORGIA
Atlanta—A. Milne & Co., Inc.
Atlanta—O'Neal Steel, Inc.

ILLINOIS
Melrose Park—A. Milne & Co., Inc.
Chicago—The Peninsular Steel Company

INDIANA
Indianapolis—The Peninsular Steel Co.

MASSACHUSETTS
Boston—A. Milne & Co., Inc.

MICHIGAN
Detroit—Alloy Steels, Inc.
Detroit—A. Milne & Co., Inc.
Detroit—The Peninsular Steel Company
Grand Rapids—The Peninsular Steel Co.

MISSISSIPPI
Jackson—O'Neal Steel, Inc.

MISSOURI
St. Louis—Ford Steel Company

NEW JERSEY
Kenilworth—A. Milne & Co., Inc.

NEW YORK
Buffalo—The Peninsular Steel Company (Tonawanda)
New York City—A. Milne & Co., Inc.

OHIO
Akron—The Peninsular Steel Company
Cleveland—A. Milne & Co., Inc.
Cleveland—The Peninsular Steel Co.
Dayton—A. Milne & Co., Inc.
Dayton—The Peninsular Steel Company
Dayton—Alloy Steels, Inc.
Toledo—The Peninsular Steel Company

OKLAHOMA
Tulsa—Earle M. Jorgensen Co.

OREGON
Portland—Pacific Machinery and Tool Steel Co.

PENNSYLVANIA
Philadelphia—A. Milne & Co., Inc.
Pittsburgh—A. Milne & Co., Inc.

TENNESSEE
Chattanooga—O'Neal Steel, Inc.

TEXAS
Dallas—Earle M. Jorgensen Co.
Houston—Earle M. Jorgensen Co

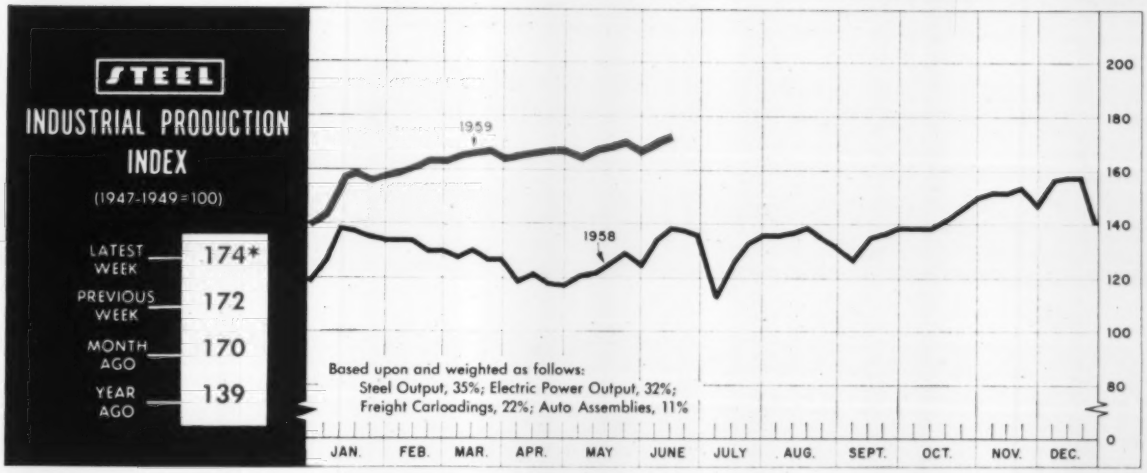
UTAH
Salt Lake City—Coulter Steel & Forge Co.

WASHINGTON
Seattle—Coulter Steel & Forge Co.

CANADA
London, Ont.—Vanadium-Alloys Steel Canada Ltd.
Montreal, Que.—Vanadium-Alloys Steel Canada Ltd.
Toronto, Ont.—Vanadium-Alloys Steel Canada Ltd.

TIMKEN® *Fine Alloy* STEEL

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS STEEL TUBING



*Week ended June 13.

Expansion to Continue into 1961

NOW that the business recovery is a little over a year old, it is time to switch from the microscope to the telescope. The view is clear for the next year or so.

To be exact, the economy is no longer in a recovery stage but has entered the expansion phase of the uptrend. Most industries are at or above their prerecession peaks. Those that are not—mostly in capital goods—are clearly in the recovery stage and are making strong bids to reach their old highs within the next year. The total effort has put us a notch or two above the 1956-57 benchmarks for gross national product and industrial production.

• **History Tells Us**—While there is no foolproof way of pinning down the turn in this cycle, precedent indicates that we still have at least a year to go, and maybe two. Over the last half century, business upswings have lasted an average of a little over two years. (It necessarily implies that some have been shorter, especially prior to World War I, while others have been longer.) The tendency since World War II has been to longer periods of prosperity. The 1948-49 comeback measured 45 months from trough to peak. (The Korean War undoubtedly was an influence.) In the uptrend after the 1953-54 setback, the term from bottom to top was 36 months. If this cycle does no better, we could expect a recession of sorts to set in about midyear in 1961.

• **Comparisons Favorable**—While the current cycle is similar to the 1953-54 period for the most part, there are a few differences that may effect the length of the upturn. For one thing, the recovery in the first year has been considerably sharper, rising 18 per cent above the trough. It has been almost without the benefit of a capital goods resurgence.

In the first year after the 1953-

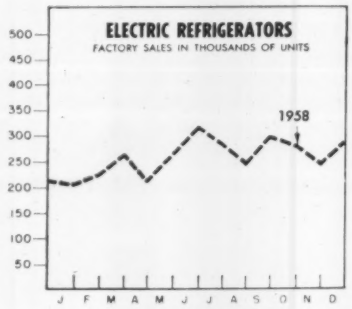
BAROMETERS OF BUSINESS

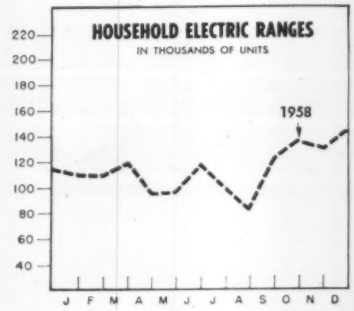
	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1,000 net tons)[2]	2,631[1]	2,604	1,751
Electric Power Distributed (million kw-hr)	13,500[1]	13,023	12,109
Bituminous Coal Output (1,000 tons)	8,535[1]	8,150	7,725
Crude Oil Production (daily avg—1,000 bbl)	7,100[1]	7,032	6,335
Construction Volume (*ENR*—millions)	$522.8	$315.7	$505.5
Auto, Truck Output, U. S., Canada (*Ward's*)	165,090[1]	162,200	105,566
TRADE			
Freight Carloadings (1,000 Cars)	700[1]	683	622
Business Failures (Dun & Bradstreet)	314	264	325
Currency in Circulation (millions)[3]	$31,803	$31,641	$31,052
Dept. Store Sales (changes from year ago)[3]	+11%	+5%	+1%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$23,042	$24,176	$22,997
Federal Gross Debt (billions)	$286.2	$286.4	$275.9
Bond Volume, NYSE (millions)	$30.9	$27.5	$27.8
Stocks Sales, NYSE (thousands of shares)	15,468	14,786	13,205
Loans and Investments (billions)[4]	$94.5	$94.6	$92.9
U. S. Govt. Obligations Held (billions)[4]	$28.5	$28.7	$31.3
PRICES			
STEEL's Finished Steel Price Index[5]	247.82	247.82	239.15
STEEL's Nonferrous Metal Price Index[6]	222.2	222.2	194.1
All Commodities[7]	119.3	119.4	118.8
Commodities Other than Farm & Foods[7]	127.7	127.8	125.0

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1959, 2,831,486; 1958, 2,699,173. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

WELDMENTS
Machine bases, components, environmental and test equipment, pressure vessels . . . welded fabrications of every kind. Extensive cutting, forming, welding, X-ray and gamma ray equipment. Qualified welders. All recognized codes. Send your drawings and specifications to us for prompt detailed quotations.
ACME WELDING
DIVISION OF THE UNITED TOOL & DIE CO., WEST HARTFORD 10, CONN.

THE BUSINESS TREND





	1959	1958	1957
Jan.	256,200	206,100	305,400
Feb.	306,200	227,800	298,700
Mar.	333,700	281,100	309,300
Apr.	301,000	210,800	281,600
May	.....	262,900	303,700
June	.....	316,300	305,100
July	.....	279,700	318,000
Aug.	.....	245,900	240,500
Sept.	.....	295,800	265,200
Oct.	.....	277,900	261,500
Nov.	.....	245,500	246,400
Dec.	.....	286,900	214,600
Totals	.....	3,116,700	3,350,000

National Electrical Mfrs. Assn.
Charts copyright, 1959, STEEL.

Total Factory Sales—Units

	1959	1958	1957
Jan.	120,800	109,000	144,500
Feb.	134,600	108,700	127,700
Mar.	172,600	117,900	139,400
Apr.	136,100	95,600	107,200
May	.....	96,000	93,600
June	.....	116,800	102,300
July	.....	98,500	88,700
Aug.	.....	81,400	85,800
Sept.	.....	121,800	124,800
Oct.	.....	135,500	120,400
Nov.	.....	129,000	116,800
Dec.	.....	143,900	113,800
Totals	.....	1,354,100	1,365,000

National Electrical Mfrs. Assn.

54 slump, the gain, aided by the start of one of the biggest capital programs in history, was only 14 per cent.

Business analysts are looking for the gradual rise in heavy equipment to continue for some time. They point out that so far there has been no evidence of any major distortion or excesses, such as those which forced a severe setback in 1957. This points to perhaps a slower rate of rise in the total economy within the next two years, but it should be more sustaining.

• **Composite Approach** — James Dawson, vice president and economist for Cleveland's National City Bank, takes a "composite" approach. He points out that the ratio of inventories to shipments, orders, and backlogs is still low. Demand deposits, which usually level off prior to a business downturn, are in good position. A diffusion index, based on the 24 major components of the Federal Reserve Board's industrial production index, still shows a strong upward tendency. Almost all the eight leading indicators developed by the National Bureau of Economic Research are climbing. And, finally, an analysis of the GNP spending approach indicates further improvement well into 1960.

"How about the second half of 1960?" Mr. Dawson asks. "Neither the barometers nor the spending approach can see that far. But it is worth noting that a rising trend throughout 1960 would constitute an upswing of 32 months. During the last 100 years, only six of the 21 nonwar expansions have lasted that long."

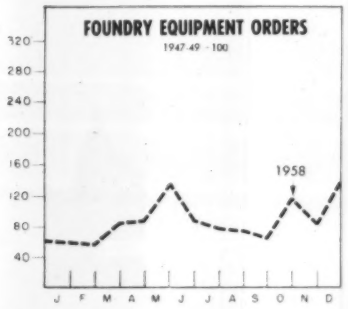
Other Factors Enter in

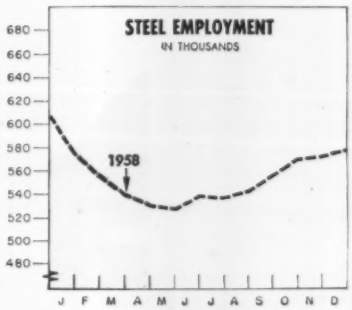
At least two other factors may influence the extent of the expansion phase. One is the change in the psychological climate. Says the Morgan Guaranty Trust Co. of New York: "The doubt and uncertainty created by the recession have all but vanished."

The other point, raised by Dr. John W. Harriman, economist for Tri-Continental Corp., New York, is that 1960 is a Presidential election year and that "economic decisions will be influenced more or less by political events."

Index Smashes Record

The strength of today's production effort is clearcut. Once again





	1959	1958	1957
Jan.	127.4	57.9	117.9
Feb.	237.1	57.6	188.4
Mar.	166.6	85.9	127.0
Apr.	154.2	88.7	101.1
May	....	136.1	136.2
June	....	87.7	187.5
July	....	77.9	98.6
Aug.	....	74.1	231.3
Sept.	....	64.5	113.9
Oct.	....	118.9	145.3
Nov.	....	83.3	59.6
Dec.	....	137.0	61.4
Avg	....	89.1	130.7

Foundry Equipment Mfrs. Assn.

	Employment in Thousands 1959	1958	Payroll in Millions 1959	1958
Jan.	584	575	$348.0	$297.4
Feb.	607	554	346.8	261.7
Mar.	631	539	400.2	271.8
Apr.	649	529	400.3	259.1
May	....	527	....	270.1
June	....	538	....	278.6
July	....	536	....	280.1
Aug.	....	542	....	299.1
Sept.	....	555	....	308.1
Oct.	....	569	....	341.7
Nov.	....	571	....	320.7
Dec.	....	577	....	340.7

American Iron & Steel Institute.

STEEL's industrial production index moved to a record of 174 (1947-49 = 100) on the basis of preliminary figures for the week ended June 13. The previous week's reading of 172 matched the old record set just before Memorial Day.

Three of the components of the index advanced in the latest week; steel was the only one to show a decline. Electric power shot to near the 13.5 billion kw-hr mark as seasonal factors took hold. Railroad freight carloadings advanced again as iron ore, coke, and miscellaneous freight picked up. And auto production climbed slightly after showing the effects of the Memorial Day layoffs for the two preceding weeks. But cars are not rolling off the assembly lines as fast as when the industry hit its 1959 peak in May.

Steel operations hold the key to the immediate future of the index. Output of 2,604,000 net tons in the week ended June 14 was the lowest in five weeks as producers missed their goal by 77,000 tons. That was their last chance to set a record until late in the third or early in the fourth quarter.

Production was scheduled for 2,620,000 tons last week, but it wouldn't be surprising if they failed to hit it again. They've missed their schedules by an average of close to 40,000 tons a week during the last two months. With no sign of a contract agreement, producers are cutting back to get set for a strike.

Trends Fore and Aft

• Construction contracts are heading for a June record, reports *Engineering News-Record*. They totaled $522.8 million for the week ended June 11. The cumulative total for the year is now 7 per cent greater than the corresponding figure for 1958. The total for industrial building is 32 per cent ahead.

• "Our backlog of orders for electrical and industrial apparatus now stands at an all-peacetime high of $255 million," says R. S. Stevenson, president, Allis-Chalmers Mfg. Co.

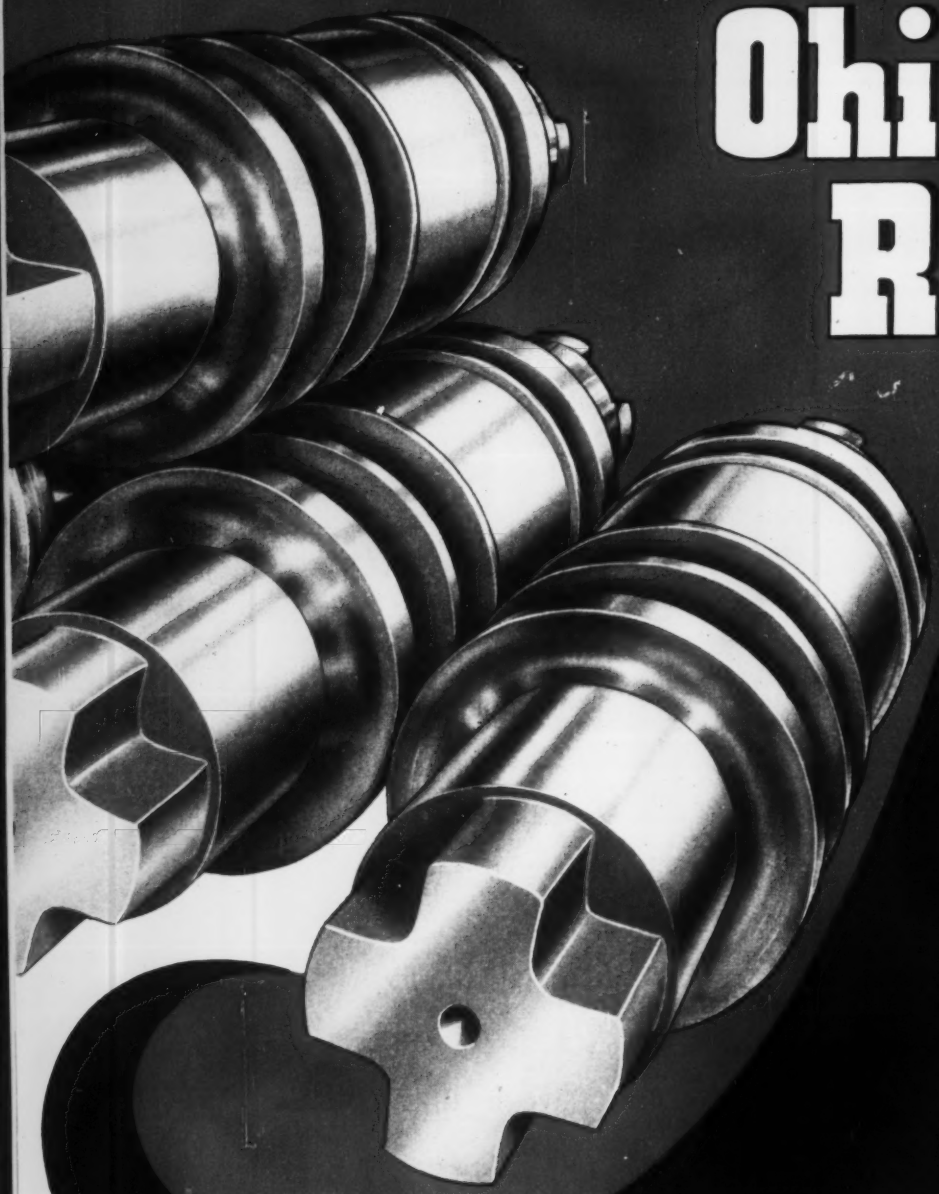
• Business activity in the Pittsburgh area hit a postrecession high in the week ended June 6, says the Bureau of Business Research, University of Pittsburgh. Part of the gain was the result of heavier freight shipments.

• Electronics producers report sales so far this year are running about a third ahead of last year's. They think the trend will continue throughout the year.

COOLIDGE
Balls

COOLIDGE CORPORATION
MIDDLETOWN, OHIO

Ohio Rolls



OHIO
IRON AND STEEL
ROLLS

CARBON STEEL ROLLS
OHIOLOY ROLLS
OHIOLOY "K" ROLLS
FLINTUFF ROLLS
DOUBLE-POUR ROLLS
CHILLED IRON ROLLS
DENSO IRON ROLLS
NICKEL GRAIN ROLLS
SPECIAL IRON ROLLS
NIOLOY ROLLS
FORGED STEEL ROLLS

shaping metal for all industry

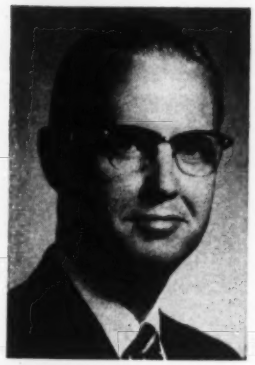
The Ohio Steel Foundry Co.

Lima, Ohio

Plants at
Lima and Springfield, Ohio

LIMA... Virtually at the center of the steel industry

OR27



GEORGE RUSSELL
Amchem Products chief eng.

IRWIN W. KILLIAN
Pines Eng. president

G. R. BOUWKAMP
Valve Tappet mfg. manager

EDWIN W. VEREEKE
Heil Process president

George Russell was promoted from assistant to chief engineer, **Amchem Products Inc.**, Ambler, Pa. He succeeds **Jay Biery**, retired.

Irwin W. Killian was elected president and chief executive officer of **Pines Engineering Co. Inc.**, Aurora, Ill. He succeeds the late **B. F. Bower.** Mr. Killian was executive vice president and general manager.

P. & M. Co., division of Poor & Co., appointed **Roger B. Coleman** vice president. He is in charge of the New York office.

John C. Helies was appointed president of **Security Engineering Div.**, Dallas, Dresser Industries Inc. He was executive vice president-general manager.

C. E. Hunt was made acting sales manager, Fabricated Rebar Div., **Phoenix Mfg. Co.**, Joliet, Ill.

Burr Tupper was made director of works engineering, **Westinghouse Electric Corp.**, Pittsburgh. He succeeds **Walter W. Wendelken**, retiring.

William R. Dirksen was appointed vice president, **Buffalo Steel Corp.**, Tonawanda, N. Y. He was assistant to the president.

At **General Electric Co.'s** Specialty Control Dept., Waynesboro, Va., **Francis J. Pallischeck** was named to succeed **Harry L. Palmer** as manager of engineering. **Joseph F. Ponzillo** succeeds **Kenneth N. Bush** as manager of manufacturing.

G. R. Bouwkamp was made manager of automotive valve tappet manufacturing at **Chicago Screw Co.**, Bellwood, Ill. He is responsible for co-ordination and direction of engineering and manufacturing at the firm's Valve Tappet Div. He was chief production engineer, Tappet Div.

David I. Dilworth Jr. was appointed a vice president and assistant to the president, **Braeburn Alloy Steel Corp.**, Braeburn, Pa. **Charles W. Schuck** was made vice president-manufacturing. Mr. Dilworth was director of metallurgy at Crucible Steel Co. of America.

Marcus M. Chapman was appointed an administrative vice president-commercial, **United States Steel Corp.**, Pittsburgh. He is succeeded by **Howard J. Mullin** as vice president-sales.

Bert E. Phillips was made acting general manager, Industrial Truck Div., Battle Creek, Mich., **Clark Equipment Co.** He is succeeded as general sales manager of the division by **John E. Mitchell.** Mr. Phillips fills a vacancy created by resignation of **Robert H. Davies** to accept the presidency of Electric Auto-Lite Co., Toledo, Ohio.

Arthur J. Briggs was elected vice president, **Continental - Diamond Fibre Corp.**, Newark, Del., subsidiary of Budd Co.

Jack R. Walchli was made manager, Licensing & Research Dept., **Navan Products Inc.**, El Segundo, Calif., subsidiary of North American Aviation Inc.

Edwin W. Vereeke, former executive vice president, was elected president, **Heil Process Equipment Corp.**, Cleveland. He succeeds **Carl E. Heil**, elected to the new post of chairman.

George J. Platt was elected president, **Paragon Electric Co.**, Two Rivers, Wis., to succeed his brother, the late **E. V. Platt.** George Platt was executive vice president.

Delco-Remy Div., Anderson, Ind., General Motors Corp., named **J. H. Bolles** to the new post of divisional director of product reliability. He was the division's director of sales and engineering and is succeeded by **H. G. Riggs**, divisional works manager since 1954. **Robert L. Kessler** succeeds Mr. Riggs.

Samuel B. Sherwin was made manager, **Ketay Dept.**, Commack, N. Y., Norden Div., United Aircraft Corp. **Wladimir Reichel**, Norden's chief of basic design, and a pioneer in the field of instrument miniaturization, assumes added duties of engineering manager, Ketay Dept.

Clay P. Hepler, former vice president-general manager, Toledo Steel Roll Co., was named plant manager of **Abbey Etna Machine Co.**, Perrysburg, Ohio.

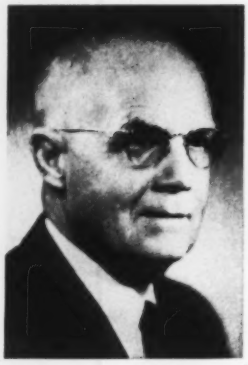
Cyrus C. Chamberlin was appointed vice president-sales, Southington Hardware Div., Southington, Conn., **Screw & Bolt Corp. of America.**

Allis-Chalmers Mfg. Co. appointed **William H. Davis** assistant manager, Norwood, Ohio, Works's Elec-

GEORGE E. KOPETZ

ARTHUR E. MURTON

Blaw-Knox group vice presidents



P. B. HARWOOD

E. B. FITZGERALD

Cutler-Hammer executive changes

trical Dept., and **James F. Fenske** manager of the department's industrial sales.

George E. Kopetz, vice president-production, was named vice president and general manager of **Blaw-Knox Co.'s** newly formed Fabricating, Engineering & Construction Group. **Arthur E. Murton**, former roll sales vice president, was appointed vice president-general manager of the new Foundry & Mill Machinery Group.

H. Webster Stull, labor counsel, was appointed director of industrial relations, **Olin Mathieson Chemical Corp.**, New York.

J. J. Dall was made assistant general manager-electric welding, **Linde Co.**, New York, division of Union Carbide Corp.

Jack E. Coddington was promoted to senior mechanical engineer, Technical Div., **Armco International Corp.**, subsidiary of Armco Steel Corp., Middletown, Ohio. **Albert L. Hacker** was made industrial director, Armco Industrial e Comercial SA, Brazil.

William F. Slook was made manager of purchases, Watertown, N. Y., Div., **New York Air Brake Co.**

William A. Harcum was made general manager, Eastern Research Center, Philadelphia, **Robertshaw-Fulton Controls Co.** Former head of the center's Physics Dept., he replaces **Ralph V. Coles**, named general manager, European operations, with offices in London. **George Revesz** was made technical director of the research center.

P. B. Harwood was appointed a senior vice president, **Cutler-Hammer Inc.**, Milwaukee. Former vice president-engineering, he is succeeded by **E. B. Fitzgerald**, who was apparatus sales manager. **Mr.** Harwood will retire the latter part of this year. He now acts in a consulting capacity to the Engineering Dept. and to the firm's management.

David W. Dewey was named eastern division manager, **Atkins Saw Div.**, Borg-Warner Corp. He resides in Saddle River, N. J.

Frank Cuthbertson was promoted to director of production engineering, **AC Spark Plug Div.**, Milwaukee, General Motors Corp. **Howard Fish** was promoted to manufacturing manager; **Charles Rose** to manager of production control. **Lawrence Bossman**, plant engineer, was promoted to works engineer. In AC's Electronics Div., **Vincent E. Ryb** was made manager of the Titan intercontinental ballistic missile guidance program; **Donald F. Ayres**, manager of the Thor ballistic missile and the Mace jet-powered missile guidance programs.

Frank O. Riley was named director of engineering and sales, **Ternstedt Div.**, General Motors Corp., Detroit. **John D. McBrian** was named chief engineer.

Nelson O. Scourfield, manager of the Dayton, Ohio, plant of **Harris-Seybold Co.**, was appointed to the new post of vice president-Dayton Div.

Edwin S. Dyjak was named Detroit district manager, **Pratt & Whitney Co. Inc.** He succeeds **Alfred C. Ekberg**, named to a similar post at San Francisco.

E. Albert Wagner, former manager of development engineering, **Exide Industrial Div.**, Electric Storage Battery Co., Philadelphia, was named manager of Exide's Service Engineering Div. to succeed **O. L.**

FRANK CUTHBERTSON

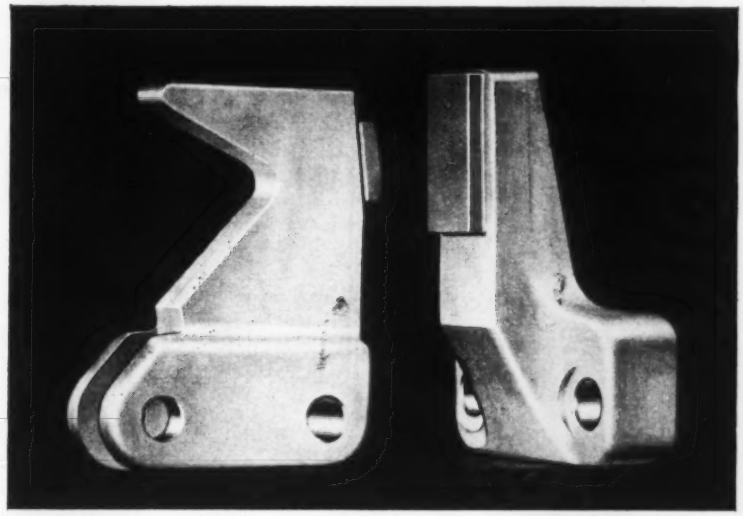
HOWARD FISH

CHARLES ROSE

AC Spark Plug manufacturing posts

TWICE-WROUGHT METAL

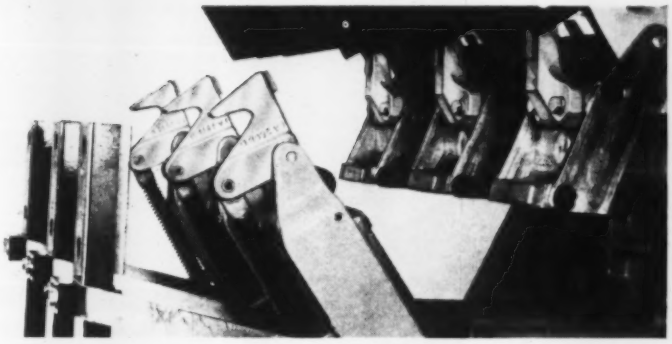
of die-pressed forgings helps Federal Pacific make new air circuit breakers more rugged—cuts machining costs in half

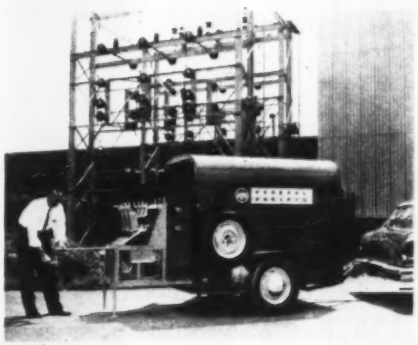


In its new Type DST magnetic air circuit breaker line, Federal Pacific Electric Company, Newark, N. J., builds in dependable operation and long life with parts of outstanding mechanical and adequate electrical properties.

Typical of this attention to detail are the arcing contacts (left). Similar parts previously used had been castings or built-up assemblies. Now the contact bodies are Anaconda Forging Brass-250 die-pressed forgings. The twice-wrought metal is denser, stronger, withstands mechanical shock better—reducing the fatigue factor and producing longer service life. The contacts also have higher conductivity. And best of all, their consistent dimensional accuracy and smooth finish cut machining costs in half.

RIGHT: Movable arcing contact assemblies at the left and the stationary arcing contact assemblies at the right in a 5-kv Federal Pacific Type DST air circuit breaker. They have a momentary current-carrying capacity of 60,000 amperes. Contact tips of tungsten alloy are silver-soldered to the forgings. These are two of several areas where Federal Pacific uses the superior physical properties of Anaconda die-pressed forgings to help provide dependable operation and long service life in its line of metal-clad switchgear.





Federal Pacific takes its circuit breakers out to industrial and electric utility customers. Here a representative sets up a demonstration of a 5-kv, 1,200-amp breaker in the field.

IT IS often easier than you think to achieve high quality and performance while simplifying fabrication and cutting over-all costs. American Brass technical specialists are constantly working with designers, production engineers and buyers, helping them meet their joint requirements—through the use of such Anaconda mill products as die-pressed forgings, extruded shapes, special-shape tubes. For this kind of practical help, see your American Brass representative or write: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Toronto 14, Ontario. 2944

ANACONDA®

COPPER • BRASS • BRONZE

NICKEL SILVER • MILL PRODUCTS

Made by The American Brass Company

W. C. MARTIN JR.
heads U. S. Fabricators

ALEX J. VOGL
Wilton Tool president

ARTHUR G. TICHENOR
AmForge president

W. R. VARNEY
Angelus Steel Treating pres.

GEORGE L. SPENCER JR.
American Zinc, Lead v. p.

M. J. LEONARD
Sierra Schroeder v. p.

Robertson, recently named motive power market manager.

W. R. Varney was elected president and general manager, **Angelus Steel Treating Corp.**, Los Angeles. He was manager, Heat Treating Div., Calmec Mfg. Corp.

George L. Spencer Jr. was elected vice president, **American Zinc, Lead & Smelting Co.**, St. Louis. He has served as a vice president of the subsidiary, American Zinc Co. of Illinois, since 1955.

Sydney M. Stoller was named vice president-engineering; **Jack L. Schumann**, vice president-sales, **Vitro Engineering Co.**, New York, division of Vitro Corp. of America.

James F. Mersereau was appointed a vice president, Petroleum-Refinery & Chemical Div., **Arthur G. McKee & Co.** He is responsible for accelerating development of foreign operations. He was a vice president of Foster Wheeler Corp., as head of its International Div.

M. J. Leonard was appointed executive vice president, **Sierra Schroeder Controls Div.**, Idaho Maryland Mines Corp., Glendale, Calif. He has been in the aircraft and automotive engineering field for the last 20 years.

Glenn Mason was made sales manager, **Jes-Cal Co.**, Fraser, Mich., subsidiary of National Automatic Tool Co. Inc.

John Roberts was made assistant general manager, **American Sinteel Corp.**, Yonkers, N. Y., subsidiary, Mueller Brass Co. He was general manager, Allied Products Corp.

Stuart J. Heiss was elected vice president, **M. S. Kaplan Co.**, Chicago.

W. J. Cox was made superintendent of conditioning yards, material handling, and rolling mill cranes at **Kaiser Steel Corp.'s** Fontana, Calif., plant. He was assistant superintendent of the conditioning yards and material handling.

W. C. Martin Jr. succeeds **Walter A. Locker**, resigned, as president, **United Steel Fabricators Inc.**, Wooster, Ohio. Mr. Martin was president of Magni-Power Co., Wooster. **David A. Taggert** was appointed secretary.

Alex J. Vogl was appointed president of **Wilton Tool Mfg. Co. Inc.**, Schiller Park, Ill. He was general manager. **William Ferrick**, sales manager, was appointed vice president-sales manager.

Arthur G. Tichenor was appointed president, **AmForge Div.**, Chicago, American Brake Shoe Co. He was with Arthur D. Little Inc. Before joining the Little organization, he was director of manufacturing, General Products Divisions, Westinghouse Electric Corp.

James A. Neff was made vice president-general manager, **Mechanical Air Controls Inc.**, Detroit.

Richard S. Skinner succeeds **W. H. Taylor**, retired, as Philadelphia district manager, Tubular Div., **National Supply Co.**

Fred O. Snyder was made manager of **Worthington Corp.'s** Cincinnati district sales office. He succeeds **Ralph G. Griffin**, transferred to the Harrison, N. J., office.

Edwin G. Chapman joined **Hitchiner Mfg. Inc.**, Milford, N. H., as sales manager. He was chief engineer, Misco Precision Casting Co.

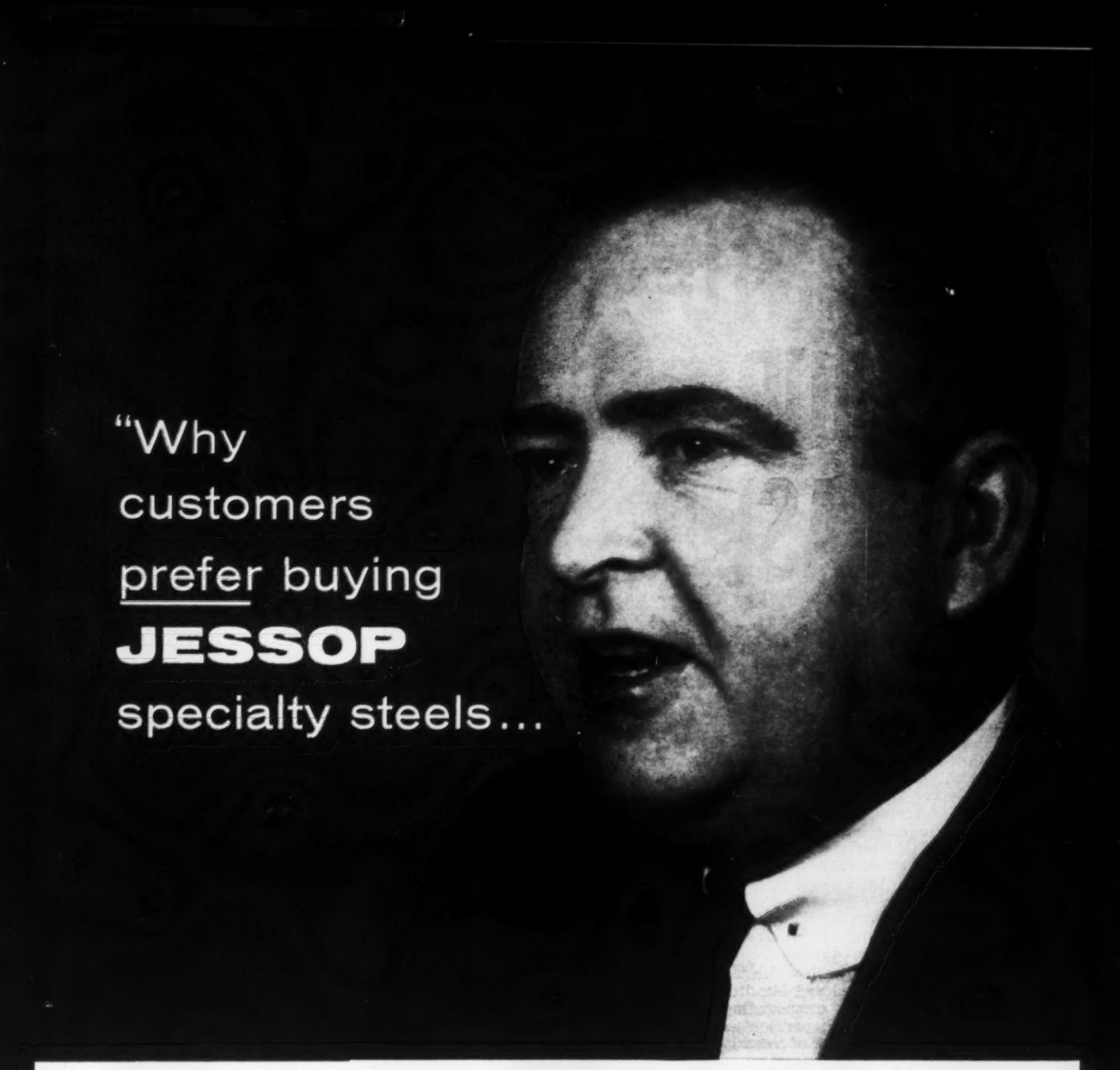
John V. Spray was made quality control chief, Scientific & Process Instruments Div., **Beckman Instruments Inc.**, Fullerton, Calif.

Midwest Piping Co. Inc., St. Louis, appointed as vice presidents: **T. R. Taylor Jr.**, former Eastern Div. manager; **E. B. Stolle**, former Pacific Div. manager; **Norman B. Champ Jr.**, former assistant to the president.

OBITUARIES...

Robert E. Noble Sr., division engineer for Mesta Machine Co., Pittsburgh, died May 25.

James C. Mabe, 41, vice president in charge of plant operations, **Chicago Pneumatic Tool Co.**, New York, died recently.



"My name is Sam Clokey, vice president-commercial of Jessop Steel, and I've been with this company for 19 years. If I were asked why our customers *prefer* buying Jessop specialty steels, I'd say it's for these same reasons our 61 career salesmen *like* selling Jessop . . .

"Because of the emphasis Jessop places on quality, our salesmen have good reason for confidence in the products they sell, and when it comes to delivery dates and all around service, they know the customer is the 'boss.'

"For these same reasons, Jessop has grown fast . . . from a $4 million operation to one with a potential of better than $60 million. Now we see the same progress at our Green River plant in Kentucky and Steel Warehousing Corporation in Chicago.

"Jessop's growth will continue because this is a fact: When you order from Jessop, you get specialty steels made to your most exacting specifications and you get faster delivery. *Specify Jessop . . . and then relax!*"

VMA 6742

JESSOP
STEEL COMPANY
Washington, Pennsylvania
OFFICES IN PRINCIPAL CITIES

Stainless, alloy, tool, cast-to-shape, and forging steels, precision ground flat stock, and other specialty steels

DIG INTO YOUR GREASE!

. . . you'll find you get greater MoS_2 coverage per dollar and a more uniform blend by adding Acheson dag® 208

Unless you look carefully, you may find it difficult to distinguish between greases made with different molybdenum disulfide additives. They may appear alike . . . even feel the same . . . but that's where the similarity stops. By actual photomicrographic comparison, the finer particles in 'dag' Dispersion 208 are your assurance of greater coverage . . . at no increase in solids content. Or, looking at it another way, equal coverage and greater effectiveness can be obtained at a much lower solids content, thus extending the range of application to even closer-tolerance mechanisms.

Because of the ease with which 'dag' 208 can be handled, measured and blended, there are additional savings in compounding time and labor. This stable dispersion assures the blender and the end-user of a consistently uniform grease.

Acheson Colloids Company
Dept. S-69, Port Huron, Michigan

Please send me free of charge your trial sample of

'dag' 208 ☐ 'dag' 200 ☐

NAME _____ TITLE _____

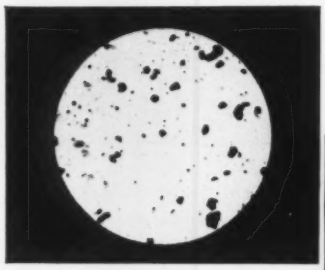
COMPANY _____

ADDRESS _____

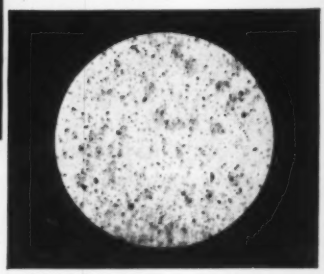
CITY _____ STATE _____

If you are one of the many progressive *marketers* now considering adding a moly-fortified grease to your line, we urge you to evaluate 'dag' 208 today! If you are one of the many current *users* of moly-fortified lubricants, be sure to specify that the ones you purchase are formulated with Acheson's moly dispersions. Send in the coupon for a complimentary sample.

The same advantages of molybdenum disulfide can be incorporated in petroleum oils and polyalkylene glycol fluids. 'dag' Dispersions 200 and 207 are the finest colloidal concentrates available for these applications. Experimental samples may be obtained upon request.



Shown here is a dramatic comparison of particle sizes. Both Acheson's new dispersion, 'dag' 208, (below) and the finest commercially available molybdenum disulfide powder (at left), have been magnified 300 times.



Tests prove that the predominantly finer particles in 'dag' 208 (at right) provide 80% greater hiding power . . . more coverage per dollar.

'dag' is a trademark registered in the U. S. Patent Office by Acheson Industries, Inc.

ACHESON *Colloids Company*
PORT HURON, MICHIGAN
A division of Acheson Industries, Inc.
Also Acheson Industries (Europe) Ltd. and affiliates, London, England

Offices in: Boston • Chicago • Cleveland • Dayton • Detroit • Los Angeles Milwaukee • New York • Philadelphia • Pittsburgh • Rochester • St. Louis

Sheffield Opens Rod Mill

SHEFFIELD DIV., Armco Steel Corp., is operating its $10 million rod mill at its Kansas City (Mo.) Works. Planning and construction of the 23 stand, three strand mill took five years.

Preliminary estimates indicate the 10 in. mill will more than triple rod production at the plant. Its purpose: To produce competitively priced, high quality finished rods for reinforcing and wire rope and increase production of wire mill and bolt and forged products.

• **Operating Cycle** — The production cycle begins with steel billets that weigh 1000 to 1800 lb, are 40 ft long, and 2¾ to 3⅝ in. square. They are reheated to 2100° F and pushed into the rod mill (roughing mill, intermediate mill, looping mill with its three repeaters, and six stand rod finishing train).

From the finishing train, rods pass through a four stage, high pressure water descaler. Traveling up to 6500 fpm, the rods are delivered into reels.

• **Mill Features**—Roller twist guides make high speed possible. The guides are set at a 45 degree angle and automatically twist rods after they pass through stands No. 1, 3, and 5 in the rod finishing train. If the guides meet expectations, rolling speed will be greatly increased in future mills, Armco officials say.

Other features include: Continuous circulating lubrication systems; a signal control panel which automatically locates trouble spots in the lubrication systems; two hydraulic systems for traverse alignment and top roll balance; magnetic amplifier speed regulating equipment which controls the speed of the mill's 23 stands to within 0.25 per cent; a narrow gage railroad which transports crop ends from beneath the mill to a scrap car; and a Rust, two zone billet reheating furnace which has a rating of 112 tons an hour.

At present, the mill will coil rods 0.218 to 7/16 in. in diameter. Pouring reels to be installed this year will enable the mill to coil 7/16 in. to 1⅜ in. rods.

• **Will Expand Facilities**—Not all the 11,500 hp of the main drives will be utilized now. The mill has been designed to roll skelp, merchant bars, and shapes. The reserve power will be needed when facilities are expanded to include those products.

Morgan Construction Co., Worcester, Mass., is the designer and builder. Westinghouse Electric Corp., Pittsburgh, supplied the electrical equipment. The general contractor is Rust Engineering Co., Pittsburgh.

J&L Improves Mill

Construction of facilities for the handling of cold-rolled sheets and coils at the Cleveland Works of Jones & Laughlin Steel Corp., Pittsburgh, is nearing completion. The facilities, costing about $3.5 million, consist of product loading and material handling equipment, and increased truck and railroad carloading facilities in an enclosed area of more than 105,000 sq ft.

Buys Two Straighteners

Pacific Tube Co. has ordered two straighteners from Blaw-Knox Co., Pittsburgh, for installation at its bar and rod plant in Los Angeles. A two plane, 16 roll unit will straighten shapes ½ to 2½ in. in cross section. A two roll, rotary straightening, sizing, and polishing machine will work on rounds 1 to 4½ in. in diameter. The processing lines will produce cold drawn bars 3/16 in. and larger, in rounds, squares, and hexagons.

Dedicates Research Center

Harbison-Walker Refractories Co., Pittsburgh, dedicated its $2 million Garber Research Center in West Mifflin Township, Pa. Offices and instrumental research are housed in one of the two main buildings; a pilot plant for product development is in the other. The mineral identification laboratories contain microscopic equipment for studies with transmitted and reflected light, emission and x-ray spectrographs for semiquantitative analyses, and an x-ray diffractometer for crystal or mineral identification. The section also has a well equipped analytical chemistry laboratory and photographic facilities.

Raymond E. Birch, director of research, reports to E. T. Hile, vice president. The management group at the center is headed by Donald F. Stock, laboratory manager, and Dr. Edwin Ruh, assistant director of research. Donald F. King is assistant laboratory manager.

MPB Plans Research Center

Miniature Precision Bearings Inc., Keene, N. H., is erecting a 40,000 sq ft building which will be used chiefly for research and development. Other activities will include the manufacture of new products in the precision metalworking field. Cost: $500,000.

Takes Over Forge Plant

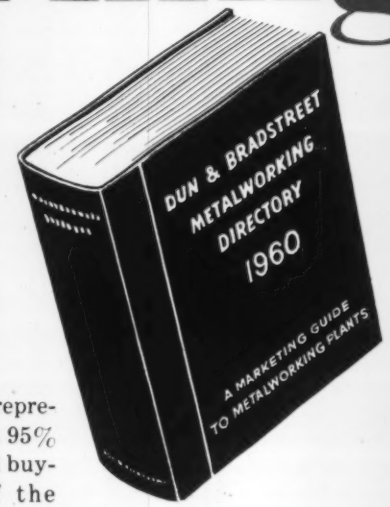
Allegheny Ludlum Steel Corp., Pittsburgh, has expanded its Forging & Casting Div. to include the firm's Los Angeles forge plant which is now under the general direction of M. R. Hemphill, general manager of the division, Ferndale, Mich. The firm's Buffalo foundry was made a part of the division last March, and its manager, L. B. Polen, was appointed manager of manufacturing for the expanded division.

Boosts Melting Facilities

Firth Sterling Inc., Pittsburgh, is constructing new melting facilities and a building to house its recently acquired Hopkins (Kellogg) process. The building will be erected at the firm's McKeesport, Pa., plant and will contain about 11,500 sq ft of manufacturing area and 1500 sq ft of office space. Melting facilities will include three machines which will be transferred from the Kellogg plant in New Jersey. They are capable of producing ingots up to 15 in. in diameter, weighing 3300 lb. A new melting machine will be installed. It will be capable of producing ingots up to 20 in. in diameter, weighing about 4 tons. Combined capacity of the melting facilities will be 800,000 lb of metal a month.

(Please turn to Page 72)

Dun & Bradstreet Announces new metalworking directory



a comprehensive marketing guide to 30,000 metal producing and metalworking plants with 20 or more employees.

The new Dun & Bradstreet Metalworking Directory gives exact plant locations . . . number of employees . . . tells in two ways what each plant makes by Standard Industrial Classification Number and in narrative . . . names key personnel at plant . . . all the information you need for complete sales coverage of the plants which represent more than 95% of the potential buying power of the entire metalworking industry. Illustrations of each section of the Metalworking Directory shown below.

JOPLIN (Harris Co)

SECTION 1
GEOGRAPHICAL

Metalworking plants with 20 or more employees are listed geographically by states.

NAME
ADDRESS

JOHNSON-MATHER INC. Emp 5000
100 S Readin Ave SIC 3531 3532 3559
Joplin 1 Kansas

Power shovels cranes drilling equipment for construction and mining

General Management — J A Allison
Purchasing — S S Hope
Production — J W Fritz
Engineering — John Roe

MODERN AIR COMPANY Emp 450
710 Homewood Rd SIC 3569 3623
Joplin 2 Kansas

Gas processing equipment welding and equipment

PRODUCT MANUFACTURED

TOTAL EMPLOYEES THIS LOCATION

SECTION 2—PRODUCT CLASSIFICATION

Names and addresses of all plants listed in Section 1 classified by products manufactured under one or more of over 170 four-digit SIC numbers.

3821 MECHANICAL MEASURING AND CONTROLLING INSTRUMENTS

ABLE INSTRUMENT COMPANY Emp 250
322 Main St SIC 3821 3361
Gasper 1 Colorado

ACCURATE MEASUREMENT CO. Emp 440
RD 3 SIC 3361 3821
Wilmington Wyo

SECTION 3—ALPHABETICAL

Plants listed nationally in alphabetical order

A

ABLE INSTRUMENT COMPANY Emp 250
322 Main St SIC 3821 3361
Gasper 1 Colorado

ABLE MANUFACTURING CO. Emp 35
Broad St Ext SIC 3399 3811
Jamestown Neb

ACCURATE MEASUREMENT CO. Emp 440
RD # 3 SIC 3361 3621
Wilmington Wyo

SECTION 4—STATISTICAL SUMMARY This section shows number of plants by Counties and States; plants within Counties, by number in each SIC classification; and plant breakdown by employee size.

MICHIGAN

COUNTY / Standard Ind. Classification	Total Employees	Total Plants	Number of Plants Employing 20-49	50-99	100 or more
	Plants Employing 20 or More				
ALLEN					
3321 Gray Iron Foundries	933	16	7	5	4
3621 Motors and Generators	198	3	1	1	1
3722 Aircraft Engines	4876	3	1	1	1
CLARK					
3961 Costume Jewelry	73	2	1	1	—

A new sales guide—national in scope—for the metalworking industry

INCREASE SALES— KNOW YOUR MARKET POTENTIAL WITH THIS DYNAMIC NEW SALES TOOL

The Metalworking Directory—the most useful sales tool of its kind in the metalworking industry will give you facts to

- Determine sales potential of each of your sales territories
- Measure sales performance against potential
- Insure prospect coverage
- Set realistic sales goals
- Adjust sales territories according to actual sales potential
- Guide salesmen to the right prospect—to the right man
- Prepare mailing lists so advertising will reach the right person in the right plant
- Study potential of territory and lines you are not now covering
- Assign sales manpower according to work load
- Locate additional prospects in your present selling area
- Allocate advertising and sales promotion dollars by area and line
- Distribute catalogs to the right person

Step-By-Step Marketing Procedure Outlined In Metalworking Directory

Included in the METALWORKING DIRECTORY is a step-by-step outline designed to help you find factual answers to your marketing and sales problems. This easy-to-understand outline, prepared after consultation with top marketing professionals in the metalworking field, makes it simple for you to perform your own marketing research.

Regional Editions of Metalworking Directory Available!

To meet the requirements of companies whose products are sold in smaller areas, five regional directories covering different marketing territories in the United States will be available. For a complete description of these regional editions, plus costs, check the coupon on this page.

IN NO OTHER DIRECTORY WILL YOU FIND *ALL THESE PLUS FEATURES*

- ★ *30,000 plants with 20 or more employees*
- ★ *Products* manufactured in *plants* shown
- ★ Produced in four sections—by *name; by product; geographically;* and with STATISTICAL SUMMARY showing *plants* and EMPLOYEES by counties and states.
- ★ . . . all plants with major products made wholly or substantially of metal
- ★ Shows by over 170 4-digit Standard Industrial Code Numbers both *primary products* and secondary products manufactured. Up to six classifications will be indicated for each plant.
- ★ Management personnel listed by name including purchasing, production and engineering executives, where available.

Regular Price—National Edition $350

Less Special Pre-Publication Discount of $50

Charter Subscription—National Edition $300

Dun & Bradstreet, Inc.
Directory Division, Dept. A
99 Church Street, New York 8, N. Y.

☐ We want to take advantage of your pre-publication charter subscription to the national edition of the METALWORKING DIRECTORY. Please send us an order form.

☐ Have your representative call to give us additional information on the national Directory.

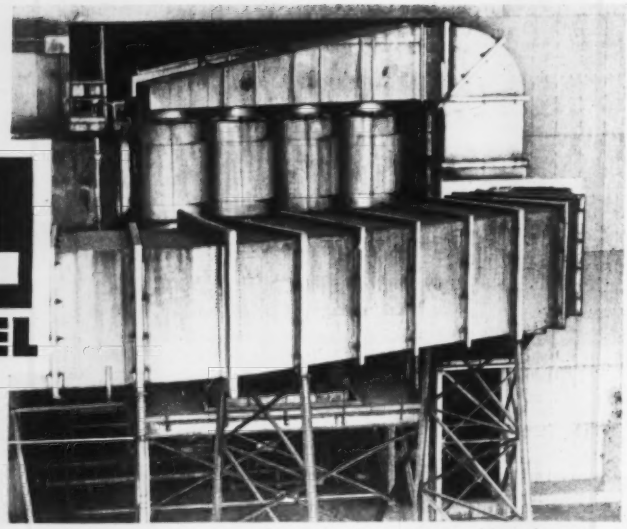
☐ Have your representative call to explain the regional Directories.

Name of Concern .....

Individual Signing .....

Address .....

City ..... *Zone* .... *State* .....



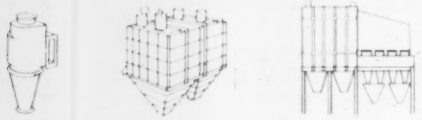
Buell Cyclone System on gas duct exit of sintering machine at Jones & Laughlin, Cleveland.

BUELL High Efficiency Cyclones at Jones & Laughlin

Specially designed for sintering machine operation, these Buell extra-efficient cyclone collectors handle 280,000 CFM of dust-laden gases from sinter bed before entering exhaust fan. Sixteen large-diameter cyclones at exhaust fan and four at the discharge end recover an important *extra percentage* of dust, beyond the abilities of ordinary cyclones, that contributes to the operating efficiency of the machine.

Only Buell Cyclones have the "Shave-off", which traps dust rising in the double eddy currents within the cyclone. This uniquely successful feature increases cyclone efficiency, permits large-diameter design which eliminates bridging, clogging, or plugging. Heavy plate construction and 3¼" refractory lining provide long service life and minimum maintenance.

Decades of experience in the collection and recovery of industrial dusts back up Buell engineers. An analysis of your plant's dust collection problems may be made without cost or obligation. For a copy of the booklet, "The Exclusive Buell Cyclone", just write Dept. 26-F, Buell Engineering Company, Inc., 123 William Street, New York 38, N. Y.



BUELL CYCLONES | "SF" ELECTRIC PRECIPITATORS | PRECIPITATOR-CYCLONE COMBINATIONS

buell®

Experts at delivering Extra Efficiency in

DUST COLLECTION SYSTEMS

(*Continued from Page 69*)

Also contained in the new building will be motor generating and rectifying equipment and a recirculating water system for the melting machines. Supplemental equipment will include grinding, sawing, and pickling facilities.

Solar Steel Opens Plant

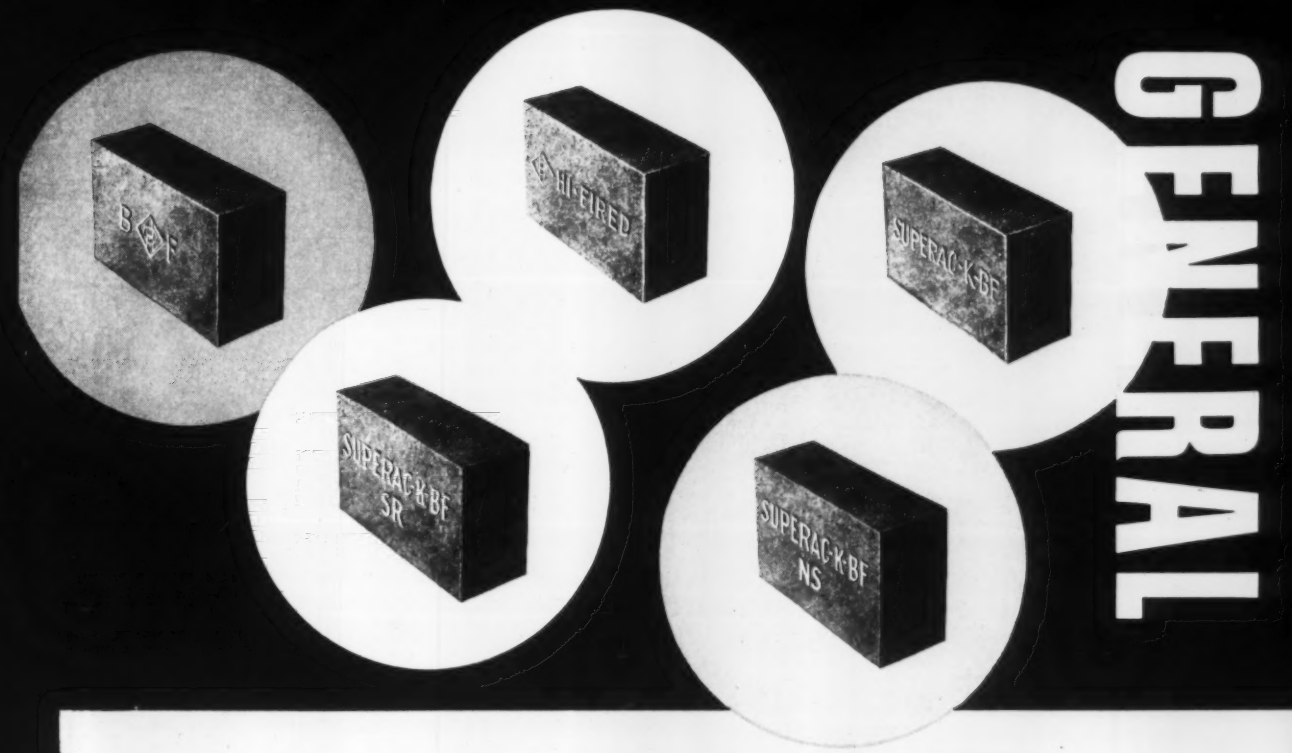
Solar Steel Corp., Cleveland, has initiated cold roll forming operations at its Hanover plant in Union, N. J. The firm entered the roll forming field as the result of purchase of the Mechanical Steel Tubing Corp., New York. Over $500,000 worth of high speed roll forming equipment has been installed in a new wing of the plant.

McKay Makes German Line

McKay Machine Co., Youngstown, has been named sole manufacturing agent in the U. S. for Mannesmann-Meer, Duesseldorf, Germany. Both firms engineer heavy duty metalworking equipment. Mannesmann-Meer specializes in steel mill equipment, including seamless tube mills, extrusion presses for tubular products, rotary tube and bar straighteners, cold Pilger machines, cold draw equipment for tubing, stretch reducing mills, rotary flying hot saws, and general associated handling equipment. McKay Machine products include cold roll forming equipment, electricweld tube and pipe mills, cold draw equipment for bars, roller levelers, press feed lines, coil cutup lines, and special automatic production machinery.

Enlarges Tubing Plant

Superior Tube Co., Norristown, Pa., has completed construction of an office building and factory addition in that city. Installation of production facilities in the addition is being rushed to completion. Total cost: $2 million. This is part of Superior's $5 million expansion program started in 1956. A large portion of the new facilities will be devoted to the processing of tubing from such metals as titanium, zirconium, columbium, vanadium, tantalum, and hafnium. Another part of the addition has been assigned to further development work on ex-



GREFCO OFFERS 5 SUPERIOR BLAST FURNACE BRICK

To meet the increasingly specialized demands of modern iron making, GREFCO now offers five different outstanding blast furnace bricks, each tailored to meet your requirements.

OLIVE HILL-BF—High duty fireclay brick for blast furnace linings. Now and for many years a standard of the industry.

OLIVE HILL HI-FIRED—Especially fired at high temperatures to combine the advantages of OLIVE HILL-BF with greater resistance to carbon disintegration.

SUPERAC-K-BF—The general purpose, high fired, superduty blast furnace brick having properties tailored to meet a variety of service conditions.

SUPERAC-K-BF (*SR*)—The high fired, superduty blast furnace brick with exceptional density, strength, and slag-resistant properties. Used frequently in bottom blocks and wearing plate areas.

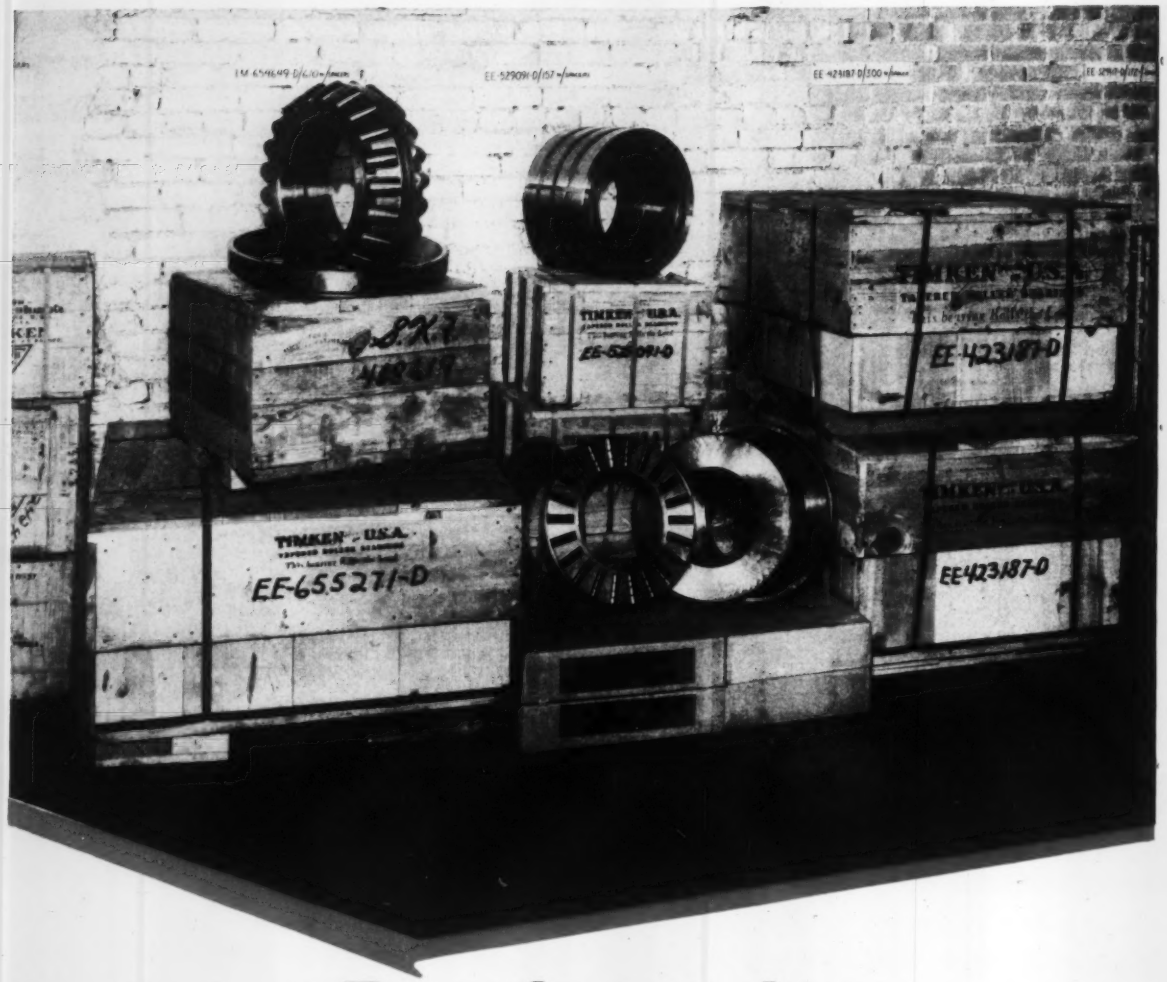
SUPERAC-K-BF (*NS*)—The high fired, superduty blast furnace brick with exceptional resistance to spalling. Sometimes preferred for stack linings.

Your GREFCO representative will be glad to discuss with you the GREFCO blast furnace brick best suited to meet the conditions in your furnaces.

GENERAL REFRACTORIES COMPANY

PHILADELPHIA 2, PA.

A COMPLETE REFRACTORIES SERVICE



In stock at Bearings, Inc.
. . . steel mill work roll, back-up roll, roll neck bearings ready to ship!

If you know bearing numbers—a check of those in the photograph will tell you they are among the largest and most expensive precision, steel mill bearings made. These and many other steel mill bearings, large and small, are ready in Bearings, Inc. stock for immediate delivery!

Why carry heavy inventories of these expensive bearings? Our large stocks for replacement "on the mill" or "off the mill"—bearings for all types of mill tables, coils, cranes and mill motors as well as ingot car bearings and pallet wheels can be ordered and delivered immediately!

No other bearing distributor carries a comparable stock of steel mill bearings ready for every emergency. If you want steel mill bearings in a hurry, call or write NOW!

Shown in the photograph are only a few of the many steel mill bearings in stock. Left, a SKF Back-up Roll Thrust Bearing sits on a 2,000 lb. Timken Back-up Roll Bearing. Center, Timken Work Roll Bearings and Rollway Self-Aligning Thrust Bearings. Right, in boxes, are a pair of matched Timken Back-up Roll Bearings.

Providing bearing service in the North →

BEARINGS, INC.

OHIO: Akron • Canton • Cincinnati • Cleveland • Columbus • Dayton • Elyria • Hamilton • Lima • Lockland • Mansfield • Toledo • Youngstown • Zanesville
INDIANA: Ft. Wayne • Indianapolis • Muncie • Terre Haute • **PENNSYLVANIA:** Erie • Johnstown • Philadelphia • Pittsburgh • York
WEST VIRGINIA: Charleston • Huntington • Parkersburg • Wheeling • **NEW JERSEY:** Camden
NEW YORK: Buffalo, Balanrol Corp. • **MARYLAND:** Baltimore • **DELAWARE:** Wilmington

and

in the South →

DIXIE BEARINGS, INC.

FLORIDA: Jacksonville • **GEORGIA:** Atlanta • **KENTUCKY:** Louisville • **LOUISIANA:** Baton Rouge • New Orleans
N. CAROLINA: Charlotte • Greensboro • **S. CAROLINA:** Greenville • **TENNESSEE:** Chattanooga • Kingsport • Knoxville • Nashville

tra long capillary tubing. Office and laboratory area has been almost doubled.

ASSOCIATIONS

Malleable Founders Society, Cleveland, elected these new officers: President, D. V. Walker, Eberhard Mfg. Co., Cleveland; vice president, C. P. Speitel, Pennsylvania Malleable Iron Corp., Lancaster, Pa. The Charles H. McCrea Medal was awarded to C. D. Joseph, Central Foundry Div., General Motors Corp., Saginaw, Mich.

Malleable Castings Council, Cleveland, elected these officers: President, R. J. LaMarche, American Malleable Castings Co., Marion, Ohio; vice president, James Sweeney, National Malleable & Steel Castings Co., Cleveland; treasurer, J. T. Dougherty, Canton Malleable Iron Co., Canton, Ohio; and secretary, T. J. Kirby, Northern Malleable Iron Co., St. Paul.

American Powder Metallurgy Institute re-elected Robert C. Burgess, Burgess-Norton Mfg. Co., Geneva, Ill., president. APMI is the technology division of the Metal Powder Industries Federation, New York.

National Association of Business Economists, newly formed, has this mailing address: P. O. Box 6878, Philadelphia 32, Pa. Officers are: President, A. G. Abramson, SKF Industries Inc., Philadelphia; vice president, G. C. Smith, F. W. Dodge Corp., New York; treasurer, S. E. Rolfe, C.I.T. Financial Corp., New York; and secretary, C. B. Reeder, E. I. du Pont de Nemours & Co., Wilmington, Del.

NEW ADDRESSES

Wales-Strippit Inc., a unit of Houdaille Industries, Akron, N. Y., moved its West Coast Div. office to 6440 E. Corvette St., Los Angeles 22, Calif. Production and warehousing facilities have been tripled.

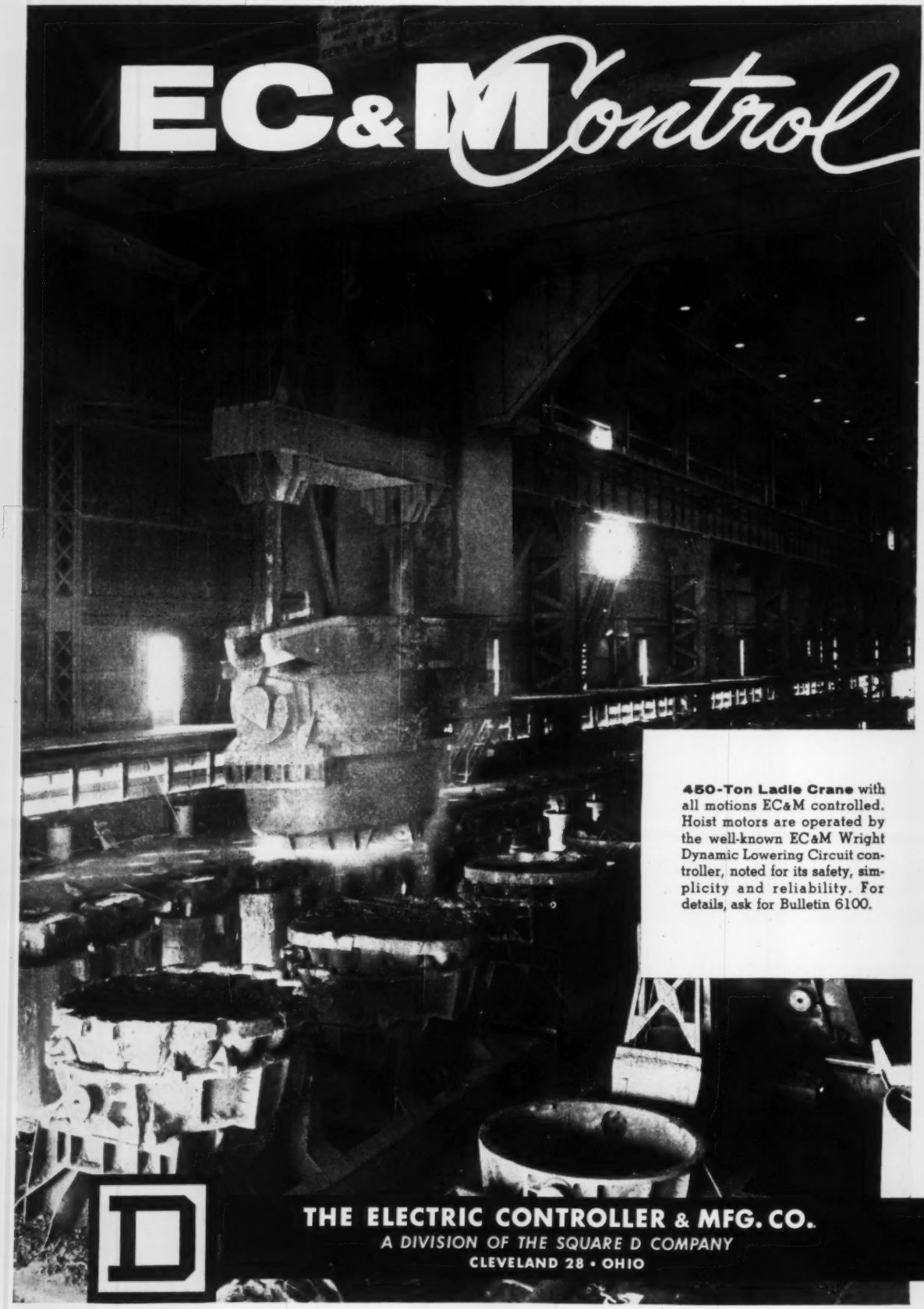
Tomkins-Johnson Co. moved its plant and offices to 2425 W. Michigan Ave., Jackson, Mich. The firm

(*Please turn to Page* 78)

PETERSON STEELS, INC.

Union, New Jersey • Detroit, Michigan • Chicago, Illinois

EC&M Control



450-Ton Ladle Crane with all motions EC&M controlled. Hoist motors are operated by the well-known EC&M Wright Dynamic Lowering Circuit controller, noted for its safety, simplicity and reliability. For details, ask for Bulletin 6100.

THE ELECTRIC CONTROLLER & MFG. CO.

A DIVISION OF THE SQUARE D COMPANY

CLEVELAND 28 • OHIO

tames the giants at Columbia-Geneva!

GIANTS AT WORK... keeping a tight rein on the toughest and most exacting operations at the Columbia-Geneva Works of United States Steel Corporation is the responsibility of EC&M control. Here, at Geneva, as well as throughout the metal-producing industry, EC&M control apparatus and engineering have earned a reputation for safe, reliable performance in basic steel making.

EC&M control is built to meet the rigid demands of open hearth and rolling mill departments. For cranes, charging machines and mill auxiliary drives, EC&M control equipment is unexcelled.

Operator's pulpit, overlooking the 132" reversing-rougher, contains EC&M Slider-Contact panels for automatic-positioning of horizontal and vertical rolls. Slider-Contacts may be moved up or down to change to new rolling schedules or to make minor adjustments quickly when rolls are changed. Roller operates a single push button to produce products rolled to accurate tolerances. For complete facts, write for Bulletin 6550.

EC&M 65-inch Type SW all-welded lifting magnet on overhead crane successfully withstands wide temperature changes in handling crop-ends from cooling pits. Bulletin 1300 describes EC&M lifting magnets for steel mill service.

The tough service encountered on charging machines is the acid-test of EC&M control. Here, highly repetitive operation under maximum loading brings out the long-life qualities of EC&M Line-Arc magnetic contactor control.

FOR BASIC STEEL MAKING, IT'S EC&M CONTROL

3125

MAY-FRAN DOES IT AGAIN!

FLAT-TOP

"moving sidewalk" conveyor eliminates plant congestion

May-Fran "Flat-Top" conveyors — a new concept in materials handling — install flush-with-floor to increase usable plant floor space . . . permit crossing truck and personnel traffic with the belt in motion . . . yet handle all types of parts and containers regardless of size, weight, shape or condition! Fabricated from heavy-gauge steel, each precision-formed steel link overlaps and interlocks to provide a smooth, sealed surface. Installed as a floor-mounted conveyor, the Flat-Top permits perfect handling and deflection of parts and containers with irregular surfaces without damage to the parts or belt. Flat-Top can be furnished to meet your requirements for width, length or capacity.

MAY-FRAN ENGINEERING, INC.

1725 Clarkstone Road
Cleveland 12, Ohio

SEND TODAY
FOR CATALOG MF-100

8322-MF

(*Continued from Page 75*)

makes milling cutting tools, air and hydraulic cylinders, and riveting machines.

VACATIONS

Lamp Div., Westinghouse Electric Corp., will observe its annual vacation period the last two full weeks in July with operations in general stopping at the close of business on July 17. Resumption of full operations in all parts and material plants is scheduled for Aug. 3.

Pines Engineering Co. Inc., specialists in tube fabricating machinery, Aurora, Ill., will close June 28 through July 11.

NEW PLANTS

Latrobe Steel Co., Latrobe, Pa., manufacturer of tool, die, and specialty steels, established a steel service center for its line of Badger oversize flat ground stock at 359 W. Ray St., Indianapolis, Ind. Don R. Shuck is in charge of the operation. The firm has also established a similar facility at 525 E. Chicago St., Milwaukee, Wis., under the direction of T. H. Fortmeier who is manager of the branch office at 2040 W. Wisconsin Ave., that city.

Ace Drill Bushing Co. Inc., Hollywood, Calif., is building a 25,000 sq ft plant at Pierce Avenue and Rindge Road, Arlington, Calif. Occupancy is expected next month.

Alsca Beryllium Machining Corp., Valley Stream, N. Y., has established in that city a plant designed especially for ultrahigh precision machining of beryllium metal components. It complies with Labor Department recommendations for handling this potentially toxic material. Initial output is in custom machined electromechanical components for the missile and space research program. Tolerances obtained on the advanced fabricating equipment are held to 25 millionths of an inch.

Imperial Battery Co. is erecting a plant in Lynchburg, Va., to make

Here's information on a new plastic chrome ore from Porter's Pascagoula Plant

Plastikrom

HIGH RESISTANCE TO BASIC SLAGS

HIGH AIR SETTING STRENGTH

HIGH REFRACTORINESS-LOW SHRINKAGE

PROPER WORKABILITY-READY TO USE

Technical men know there is a *difference* in plastic chrome ore refractories . . . some chrome ore refractories resist heat, shrinkage and deformation, others are less satisfactory. The secret: *crystalline structure of chrome ore.*

Some ores, because of their crystalline structure, are more *plastic*. Less desirable ores require greater additions of clay to produce a plastic material . . . under high-temperature conditions, the clay fluxes the chrome and the refractory fails.

PLASTIKROM from Porter's Pascagoula Plant is made from select ores having a crystalline structure that develops a natural plasticity. Only minor clay additives required. PLASTIKROM is processed and manufactured in the industry's newest, most modern facilities, to highest quality standards.

For the finest, high-grade plastic chrome ore refractories . . . specify PORTER PLASTIKROM. Complete information available from: *Refractories Division, H. K. Porter Company, Inc., Porter Building, Pittsburgh 19, Pa.*

REFRACTORIES DIVISION PORTER **H.K.PORTER COMPANY, INC.**

PORTER SERVES INDUSTRY: with Rubber and Friction Products—THERMOID DIVISION; Electrical Equipment—DELTA-STAR ELECTRIC DIVISION, NATIONAL ELECTRIC DIVISION; Copper and Alloys—RIVERSIDE-ALLOY METAL DIVISION; Refractories—REFRACTORIES DIVISION; Electric Furnace Steel—CONNORS STEEL DIVISION, VULCAN-KIDD STEEL DIVISION; Fabricated Products—DISSTON DIVISION, FORGE AND FITTINGS DIVISION, LESCHEN WIRE ROPE DIVISION, MOULDINGS DIVISION; and in Canada, Refractories, "Disston" Tools, "Federal" Wires and Cables, "Nepcoduct" Systems—H. K. PORTER COMPANY (CANADA) LTD.

from CONTINENTAL
a lustrous new

TINNED WIRE

Here's smoothness and luster you rarely get in tinned wire. Continental's technical skill makes possible an enduring, uniformly bright finish . . . a wire so bright that it can replace plated wire on many products. It retains its brightness for long periods of time in normal use. Continental tinned wire meets your needs for quality and workability and is available in almost any temper and analysis in medium low carbon and low carbon steels.

FINE—16 gauge through 30 gauge, in 8" diameter coils
COARSE—20 gauge through 5/16", in 16" and 22" diameter coils.

For smooth beauty and high degree of perfection in wire, you will want to investigate Continental Tinned Wire. Write or Telephone—today; or return coupon below.

FILL OUT AND RETURN COUPON TODAY

NAME _____ TITLE _____
COMPANY _____
ADDRESS _____
CITY _____ STATE _____
☐ Send Complete Details ☐ Have Salesman Call

CONTINENTAL STEEL
CORPORATION • KOKOMO, INDIANA

PRODUCERS OF: Manufacturer's Wire in many sizes, tempers, and finishes, including Galvanized, KOKOTE, Flame Sealed, Coppered, Tinned, Annealed, Liquor-Finished, Bright and special shaped wire. Also Welded Wire Reinforcing and Galvanized Fabric, Nails, Continental Chain Link Fence, and other products.

automotive, diesel, and industrial batteries. Officers of the firm are: President, H. P. King; vice president-sales, R. L. Lawrence; secretary, LeRoy F. Groff; and treasurer, S. E. Merkel.

NEW OFFICES

Torrington Co., Torrington, Conn., opened a district office at 244-246 Walker St. S.W., Atlanta, Ga. Larry Paine is the district engineer in charge of the office. This is another step in the firm's expansion of its Bearing Div., Torrington, and its Bantam Bearings Div., South Bend, Ind.

Acme Industries Inc., maker of air conditioning and refrigeration systems, Jackson, Mich., established a direct factory sales office at 18450 Livernois Ave., Detroit, Mich.

CONSOLIDATIONS

Allis-Chalmers Mfg. Co., Milwaukee, plans to acquire **Lakefield Mfg. Co.**, Wauwatosa, Wis., fabricator of components for tractor shovels and side booms used on construction machinery. It has been a supplier to **Tractomotive Corp.**, Deerfield, Ill., which Allis-Chalmers also plans to acquire.

American Machine & Metals Inc., East Moline, Ill., purchased Glazer-Steers Corp., Newark, N. J., maker of record changers for high fidelity and stereophonic use.

Chromalloy Corp., White Plains, N. Y., acquired **Chromizing Co.**, Los Angeles, producer of metal castings and alloys.

Halliburton Oil Well Cementing Co., Duncan, Okla., plans to acquire **Otis Engineering Corp.**, Dallas, manufacturer of oil tools and equipment.

Art Metal Construction Co., purchased **Knoll Associates Inc.**, **Knoll International Ltd.**, and **Knoll Textiles Inc.**, manufacturers and designers of furniture and textiles. Headquarters of the firms are in New York.

A COMPLETELY *NEW* SERIES!

Lodge & Shipley PRESS BRAKES

WILL *YOUR* NEW BRAKE HAVE ALL THESE FEATURES AT LODGE & SHIPLEY'S LOW *STANDARD* PRICE?

NEW... Pitman Assembly redesigned for long life with little maintenance

EXCLUSIVE . . . Combination Air Clutch and Mechanical Brake

NEW . . . Wedge Ram Pressure Release, improved exclusive design

NEW . . . Quad-lateral Ram Slide Bearing, full-length, full-time

NEW... Ready-Pivot Ram Adjustment for out-of-parallel operations

NEW . . . Dovetail, Double Rocker Bed-Mounting on solid steel housing

NEW . . . "Long Operation" standard controls for versatile operation

PROVED . . . One-piece, heat-treated, machined and ground Eccentric Shafts

NEW . . . Micro-Fog, oil bath and grease Lubrication System

PROVED . . Two full bearings on each eccentric shaft

NEW . . . Sectional die clamps on ram nose open automatically

NEW . . . Stroke Position Indicator shows top and bottom dead center

NEW . . . optional Two-Speed Transmission can be field-installed

Available in 120 through 250 ton capacities; bed lengths from 8 to 14 feet. Shown is Model Series 150A10 capacity 1/4" x 10'

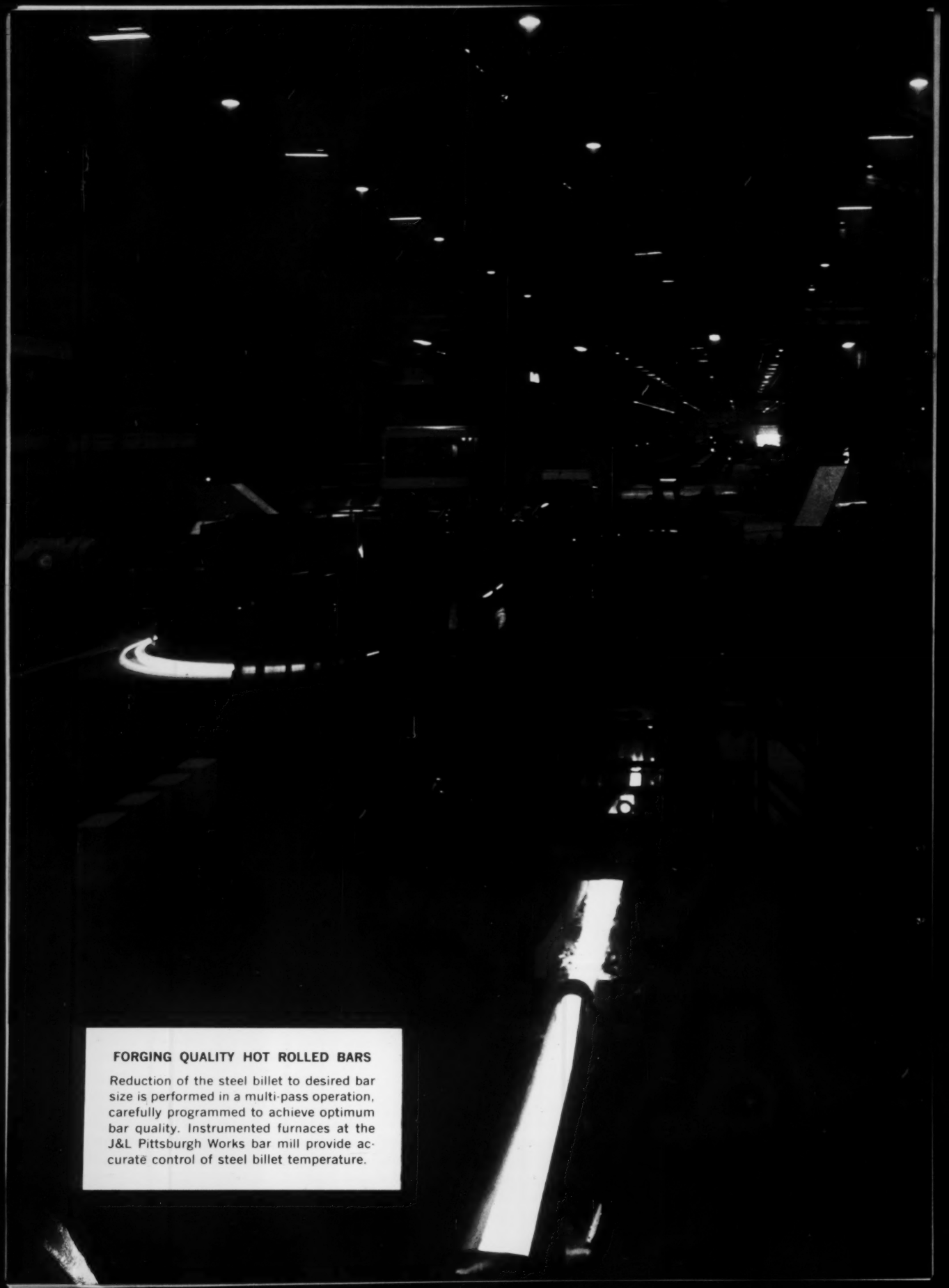
New and completely redesigned, Lodge & Shipley Power Press Brakes offer feature after feature important to accurate, low-cost operation. Virtually every one of these advantages are included in the low base price . . . extras on the machine, but *not* on the invoice.

Space limits us to a bare listing of important new features. Request your copy of the New Condensed Press Brake Catalog today. The Lodge & Shipley Co., 3070 Colerain Ave., Cincinnati 25, Ohio.

SEE OUR CATALOG IN SWEET'S

More than ever before, your LODGE-ical choice . . .

Lodge & Shipley

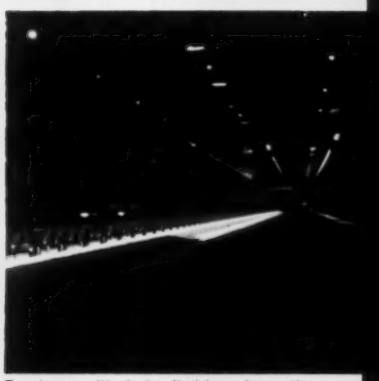


FORGING QUALITY HOT ROLLED BARS

Reduction of the steel billet to desired bar size is performed in a multi-pass operation, carefully programmed to achieve optimum bar quality. Instrumented furnaces at the J&L Pittsburgh Works bar mill provide accurate control of steel billet temperature.

Hot flame scarfer removes surface imperfections from the bloom to assure top quality steel billets, basic raw material for the bar mill.

3″ x 3″ steel billets emerge from the billet mill to this cooling bed where they are tested by J&L metallurgists for product uniformity.



Forging quality hot rolled bars leave the bar mill on this runout table. They are inspected for accuracy of section.

Refrigerator cam shaft, forged from a 57/64″ coarse grained C-1117 square, has a perfect balance of properties for long, hard usage.

Automobile transmission part, forged from a 2¼″ round, has exact balance of properties that helps reduce production cost. AISI Grade 4027.

Automobile steering knuckle support is forged from 1-15/16″ J&L round. AISI Grade 1340.

J&L Forging Quality Hot Rolled Bars are carefully detailed for precise balance of chemistry and physical properties to meet your special requirements. As an integrated producer, J&L combines control of raw materials with the special facilities and successful production experience that are necessary **to provide exactly the right forging quality steel for any application.** A field staff of J&L metallurgical consultants will work with you to determine the steel which will best serve your particular requirements for forging, machining and end product use. The consultant then works directly with the J&L mill to obtain a forging steel that **is tailor-made for your operation.** Simply call your local J&L district office for a preliminary discussion, or you may write directly to Jones & Laughlin Steel Corporation, 3 Gateway Center, Pittsburgh 30, Pennsylvania.

Jones & Laughlin Steel Corporation

PITTSBURGH, PENNSYLVANIA

BOTH REDUCERS HAVE THE SAME CAPACITY!

This dramatic saving in weight and space is possible only because the reducer on the left has Philadelphia Precision Ground Gearing . . . a new development, so significant you can solve drive problems you could never solve before . . . because you get engineering advantages that have never been available before.

For the first time, standard commercial speed reducers are available with gearing of master gear quality. Extreme accuracy of profiles, profile spacing and surface finish reduce dynamic load factors. Harder gear materials can be used. Result: increased load carrying capacity without sacrificing performance characteristics.

Gear noise is reduced to the point where it is no longer a controlling factor in applications where low sound levels are important.

Backlash is reduced in reversing drives . . . and it is uniform where precision of movement is important.

Vibration is virtually eliminated because tooth to tooth errors, accumulated pitch errors and composite errors are reduced . . . smoother contact results.

Longer gear life. Improved accuracy and better surface finish eliminates "running-in" periods and the resulting wear on gearing.

If you have a new product on the boards . . . design changes coming up . . . or new drive requirements of any kind, Philadelphia Precision Gear Drives may give you the competitive edge you've been looking for. Write for full data on precision ground gearing in spiral bevel, parallel shaft and In-Line reducers as well as gearmotors and Motoreducers. If you have a special drive problem, the full facilities of our engineering staff are available to help you find the solution.

PHILADELPHIA GEAR CORPORATION
Erie Avenue and G Street • Philadelphia 34, Penna.

philadelphia gear drives

Offices in all Principal Cities • Virginia Gear & Machine Corp., Lynchburg, Va.
INDUSTRIAL GEARS & SPEED REDUCERS • LIMITORQUE VALVE CONTROLS • FLUID MIXERS • FLEXIBLE COUPLINGS

NEW CORES DON'T CRAZE— A new molybdenum alloy makes a superior diecasting die core material, says the American Die Casting Institute Inc., New York. It effectively resists heat checking and crazing even when brass or magnesium and aluminum base alloys are handled.

SAVE WITH PLASTIC DESIGN— Savings in steel and design time are the goals of a series of lectures for engineers being sponsored by the American Institute of Steel Construction Inc., New York. They're being given in 11 cities. Registration fee: $6.

GRAPHITE HOLDS 3 MILLION PSI— Basic solid state studies have turned up graphite filaments with tensiles of 3 million psi, a 1000 times increase above normal. Availability of perfect crystals is expected to broaden research subjects and turn up practical applications, says Union Carbide Metals Co., a division of Union Carbide Corp., New York.

LITERATURE CATALOG— You'll be able to locate technical literature far more easily when world leaders decide on a master plan for cataloging. Western Reserve University and Rand Development Corp. have a world conference scheduled for September at Cleveland.

METRIC INCH: PRO AND CON— "I have long been convinced that ultimately the U. S. must shift to the metric system," says Lewis L. Strauss, secretary of commerce, who recently addressed the American Physical Society. But proponents of the decimal inch observe an increasing trend toward its adoption rather than the metric system, says the American Society for Testing Materials, Philadelphia.

PRINTED CIRCUIT BEATS HEAT— A printed circuit made of alumina and a fired on molybdenum-manganese compound operates perfectly at 1300° F, a threefold increase over ordinary printed circuits, says Advanced Vacuum Products Inc., Stamford, Conn. (George L. Heitman, production manager, calls it a Molumina circuit.) Advantages cited: It's unaffected by moisture, operates in corrosive atmospheres, and greatly increases physical and electrical characteristics. The circuits can be degreased or scrubbed with soap and water.

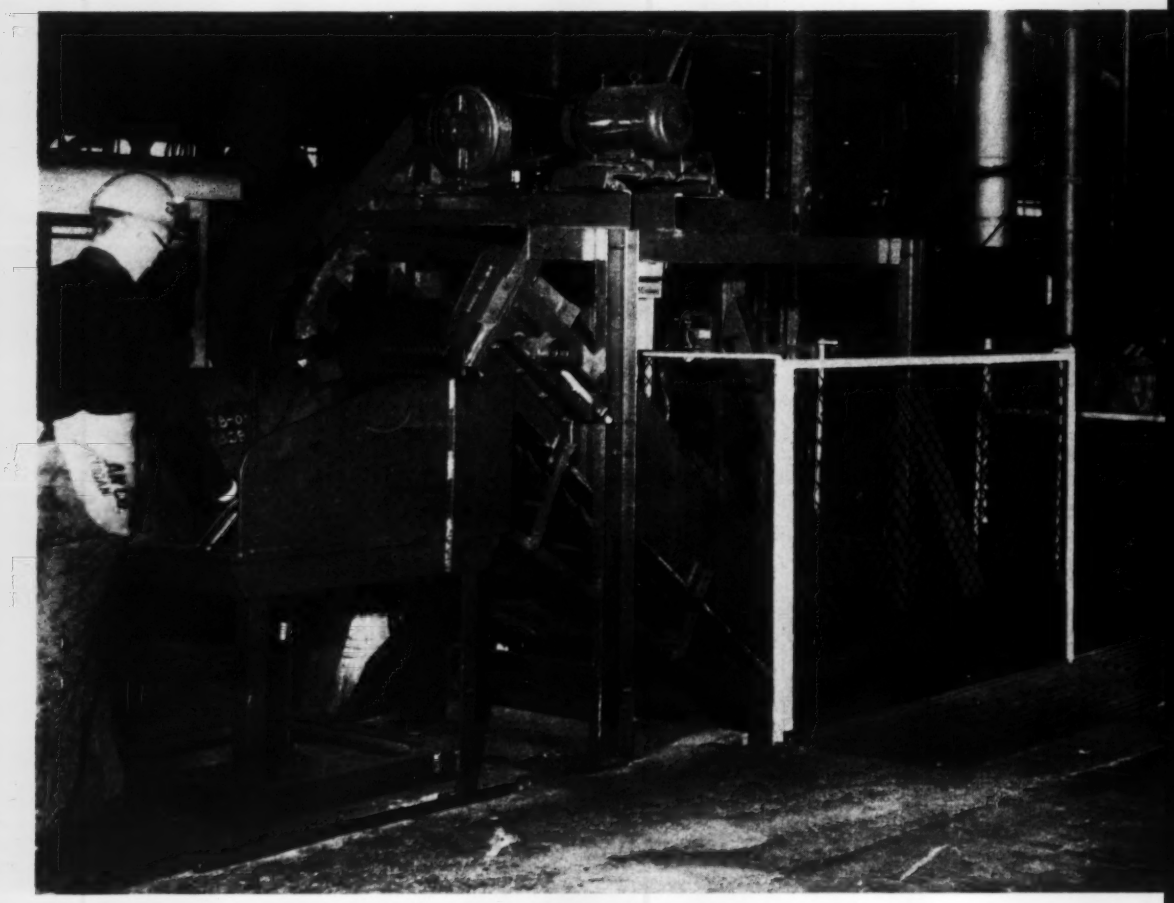
NEW DIECASTING ALLOY— HM11XA is the latest member of the magnesium thorium group of alloys for service above 500° F. It retains its properties through 800° F, says Dow Chemical Co., Midland, Mich., and can be used with regular diecasting equipment.

IRON ORE CONCENTRATOR— Roasting Labrador hematite in a reducing atmosphere produces magnetite which can be readily separated from non-ore bearing particles. The process nearly doubles the iron content (38 per cent becomes 71 per cent), say Canadian federal mine scientists.

PORCELAIN GAINS UTILITY— Steel or aluminum expanded metals now come with a series of porcelain enamel coatings for decorative grilles, signs, or backgrounds, says Ingram-Richardson Mfg. Co., Beaver Falls, Pa.

HI-TEMP ELECTRICAL CONDUCTOR— Combining copper and zirconium produces an excellent alloy for electrical equipment operating at high temperatures, says American Metal Climax Inc., New York. It is said to be far superior to unalloyed copper.

CHEAPER VACUUMS— A $235 pump uses vaporized titanium to react with stray molecules of gases and produce a high vacuum (it's called gettering). Two can evacuate a 6.5 gallon container, lowering the vacuum from 50 microns to 0.1 micron in 8 minutes, says NRC Equipment Corp., Newton, Mass.



Present practice line shows difference from other types of heat treatment. Cooling rate reaches 1050° F right at proper transformation point but passes through bainite line before it reaches 900° F. Salt is kept at 650-675° F

Isothermal Heat Treating Approach Wins Savings, Quality Bonus

Steel firm tailors salt bath technique to replace standard oil quench and draw of eutectoid steel parts. Results: Savings in labor, floor space, and equipment

A NOVEL modification of a standard salt bath technique (austempering or isothermal annealing) brought savings in labor, floor space, and equipment costs to a major eastern steel company. A bonus, better quality, was unexpected.

Product: A 3 lb rail hook made of a eutectoid steel.

Method: A 650 to 675° F quench in molten salt, following a 1700° F heat and forming operation.

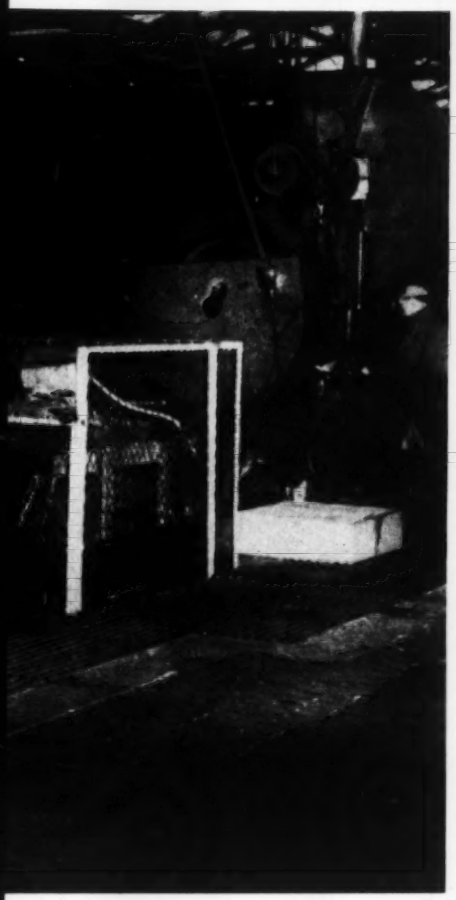
Result: Complete transformation of the metal into fine pearlite.

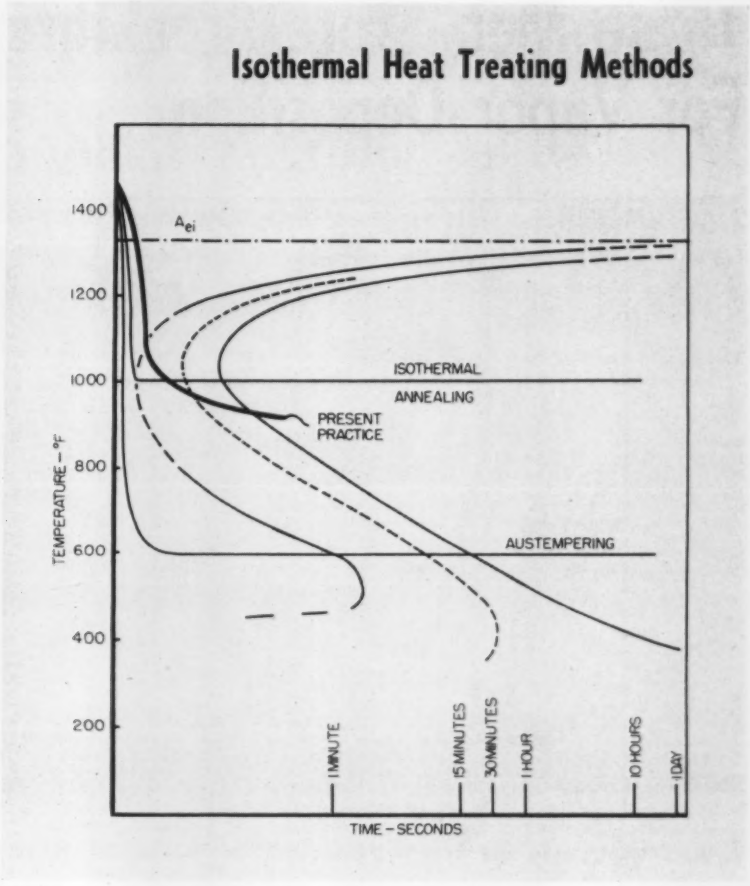
- **The old system was too inflexible and required too close control.**

The product must have spring properties, toughness, and resist deformation since it may be re-used several times. It starts as a 2½ in. billet which passes through primary and finishing mills to become a modified T-section blank about 2 in. high and a foot long.

Blanks are heated to 1850° F in a gas furnace, formed in two stages on a press, and heat treated.

Parts used to come from the forming press (at 1700° F), dropping into an oil quench tank with jet agitation. Gas fired or electric furnace tempering followed to pro-





duce a tempered martensite.

The trouble with the old system stemmed from a lack of flexibility. As long as production moved at a steady pace, parts came out with the proper hardness. But let a breakdown occur, or the operating crew take a break, and parts got overtempered—hardness fell below specification. Another thing: Many times an operator was permitted to decide whether parts were properly hardened.

Part temperature before quench was also too critical. Delay cooled the piece from a normal 1700° F greatly affecting proper quenching.

• Replacement with Holden furnace equipment followed extensive experimentation.

Company engineers decided to put in a new system and replace the tempering furnaces with a salt bath and automatic conveyors. They first planned to have a 20 minute temper at 1050° F, but A. F. Holden Co., Detroit, warned against plunging an oil-quenched part into molten salt.

First attempts to anneal the parts isothermally—cooling from 1700° F to 1050° F in 0.75 second—produced coarse pearlite which wasn't hard enough. Work with temperatures between 500° F and 1050° F brought out the fact that 600 to 650° F produced exactly what was needed. And there was no trace of bainite which is supposed to form at quenching temperatures under 900° F. Steel company metallurgists believe the cooling rate is just right to complete transformation of the microstructure into fine pearlite before the part reaches 900° F—transformation is complete in 10 to 20 seconds.

Initial tests were carried out on laboratory equipment; later, a 3000 piece batch was put through the paces on Holden equipment at Detroit. Once results were confirmed, steel company officials decided on a continuous design which would handle 30 parts a minute (each weighs 2.4 to 3.9 lb, depending on cross section).

• The trick is to have a large salt volume to take care of the heat.

The conveyor which carries the parts through the salt bath is timed to hold them under for 3 minutes—a large safety factor since theoretically it should take only 20 seconds for complete transformation.

(The furnace holds about 233 cu ft of potassium-sodium nitrate that is well-agitated to insure a high handling capacity.)

The present system is so uniform plant engineers can exactly correlate carbon content and hardness. It produces parts with improved spring characteristics that last longer in service than previous products.

And the reason Holden people are pleased is that the installation cost of three units equaled the cost of one proposed originally.

These Men Score Breakthrough For Vapor Deposition

Louis Mager, executive vice president, Dr. Romeo G. Bourdeau, project supervisor, and Dr. B. L. Averbach, chairman, Alloyd Research Corp., discuss new process for depositing dense, adherent coatings of tungsten, chromium, and molybdenum on metals and refractories. (Dr. Averbach holds a ¼ in. tungsten tube with walls 0.002 in. thick)

COULD YOU use a dense, strong tungsten tube with 0.002 in. walls?

Or a plating of molybdenum on a ceramic?

Or a ductile coat of chromium 0.005 in. thick that won't spall or crack when you bend it?

Such things are a practical reality, says Alloyd Research Corp., Watertown, Mass., which has developed a way to deposit such refractory metals in a vacuum. (It is similar to vacuum metallizing of thick coatings of aluminum and cadmium reported June 1 in STEEL, p. 96.)

• The developer says the process offers many market possibilities.

Electronics and missile people stand to benefit first, Alloyd officials claim. Possibilities include plate elements for radio tubes and tubing for high temperature areas in missiles. (Why not wells for high temperature sensing devices?)

Alloyd also points out that seamless, high density tubing can be made in much larger sizes and lengths without much difficulty. (Dr. B. L. Averbach, chairman of the company and associate professor of metallurgy at Massachusetts Institute of Technology, says that to the best of his knowledge no one has yet made tungsten tubing as thin, dense, or pure.)

Pore-free chromium deposits on base metals offer another way to protect metals from corrosion. It may turn out to be a substitute for stainless, says Alloyd.

Tungsten or molybdenum deposits have also been made on graphite, a major possibility for rocket nozzles.

• Deposits are tight, ductile.

Chromium coatings 0.005 in. thick on copper and steel show no signs of spalling or peeling, cracking, or flaking after extended bend testing. Such coatings completely protect a copper base for 64 hours in a 20 per cent nitric acid solution.

Alloyd's breakthrough came as an outgrowth of its efforts to make large quantities of high purity metals. Production is still in the pilot plant stage although processing costs are being accumulated and analyzed. Meanwhile, Alloyd would like to try coating a wider variety of parts or forming thin components for other firms who would like to test its process.

Paint Use Cut 50 Per Cent

PAINT CONSUMPTION has been cut 50 per cent by electrostatic spray painting at Kay-Mar Industries Inc., Cassopolis, Mich. The company's six month paint inventory was stretched to a year's supply. Another gain: About one-third of the floor space formerly required for painting was saved with the Ransburg No. 2 process unit. Kay-Mar makes metal furniture.

• Electrostatic painting provides a heavier, more uniform application with metallic paints.

It's possible to use a higher metal content in the coating. This means a better finish is possible. Color changes are easier. Rejects, which used to run 1.5 per cent, are down to 0.25 per cent.

Important safety benefit: General housekeeping was improved so much that insurance rates were reduced. Fumes and paint odors were lessened.

• Painting — Furniture legs and frames go through four cleaning stages before painting. Then they're put on workholders spaced on 36 in. centers. A 600 ft overhead conveyor carries the work at 9 fpm.

Chairs are hung one to a fixture. Other parts such as table legs, are grouped—up to eight to a fixture. Smaller hardware pieces are grouped in larger quantities on tree type fixtures.

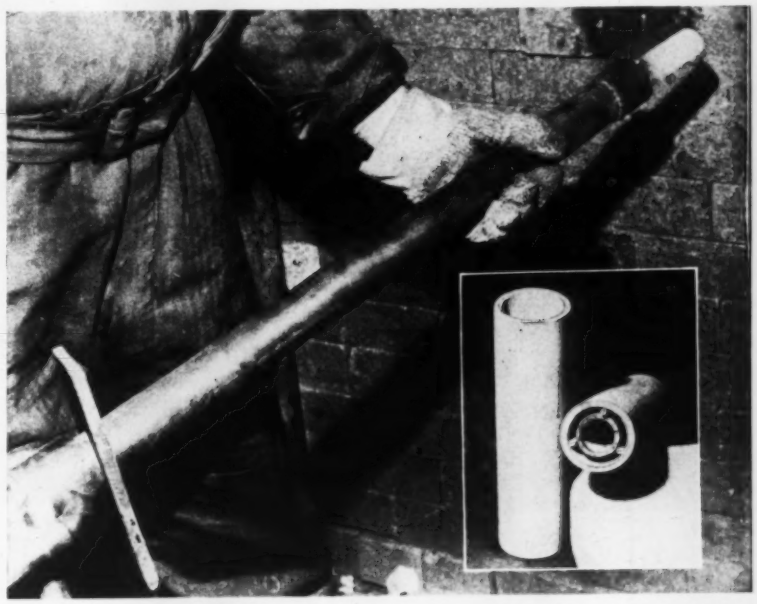
The parts rotate as they make a loop around the floor mounted spray unit. The surfaces get a complete, uniform coating. The same reciprocator stroke length is used on all parts except the bar stool—the stroke is lengthened for the longer legs.

After painting, parts move along into a gas fired oven to bake out at 400° F for 8 minutes. Then they're inspected, assembled, and packed.

The changeover to electrostatic painting was made with minimum work interruption. The plant was closed at Friday noon and opened the following Tuesday.

Sleeve Guards Thermocouple Against Thermal Shock

Silicon nitride shield lasts four times as long as those previously used on suction pyrometer. Instrument checks air temperature in the open hearth combustion zone



Pyrometer on water cooled probe checks open hearth temperatures. Inset: Double walled refractory tube protects thermocouple from radiant heat and thermal shock

NEED parts with high temperature stability and thermal shock resistance? Silicon nitride is being used in such applications.

Sleeves made of the material protect thermocouples from radiant heat in open hearth gas temperature measurement. They're made by Haynes Stellite Co., Kokomo, Ind., a division of Union Carbide Corp.

• A suction pyrometer, with a shielded thermocouple, measures temperatures in the open hearth combustion zone.

For efficient open hearth operation, air must be preheated to a high temperature before it enters the combustion zone. A thermocouple, mounted on the end of a water cooled probe, measures air temperature.

The air is drawn through a shield, consisting of two concentric tubes and made of refractory material. It protects the thermocouple against radiant heat from furnace walls and temperature fluctuation up to 2700° F in 90 seconds.

• A casting process turns out parts that last longer.

Shields made of silicon nitride last four times as long as those previously used. They're made by slip casting pure silicon metal, then sintering it in a nitrogen rich atmosphere. Parts can be made in a wide range of shapes and sizes.

The material is used in gas temperature measurement in other parts of the open hearth. In some cases, parts are exposed briefly to temperatures as high as 3200° F.

Optics Slash Machine Alignment Time

Instruments are used to make precise adjustments in the erection of large machine tools. The tooling has also helped boost the quality of machines

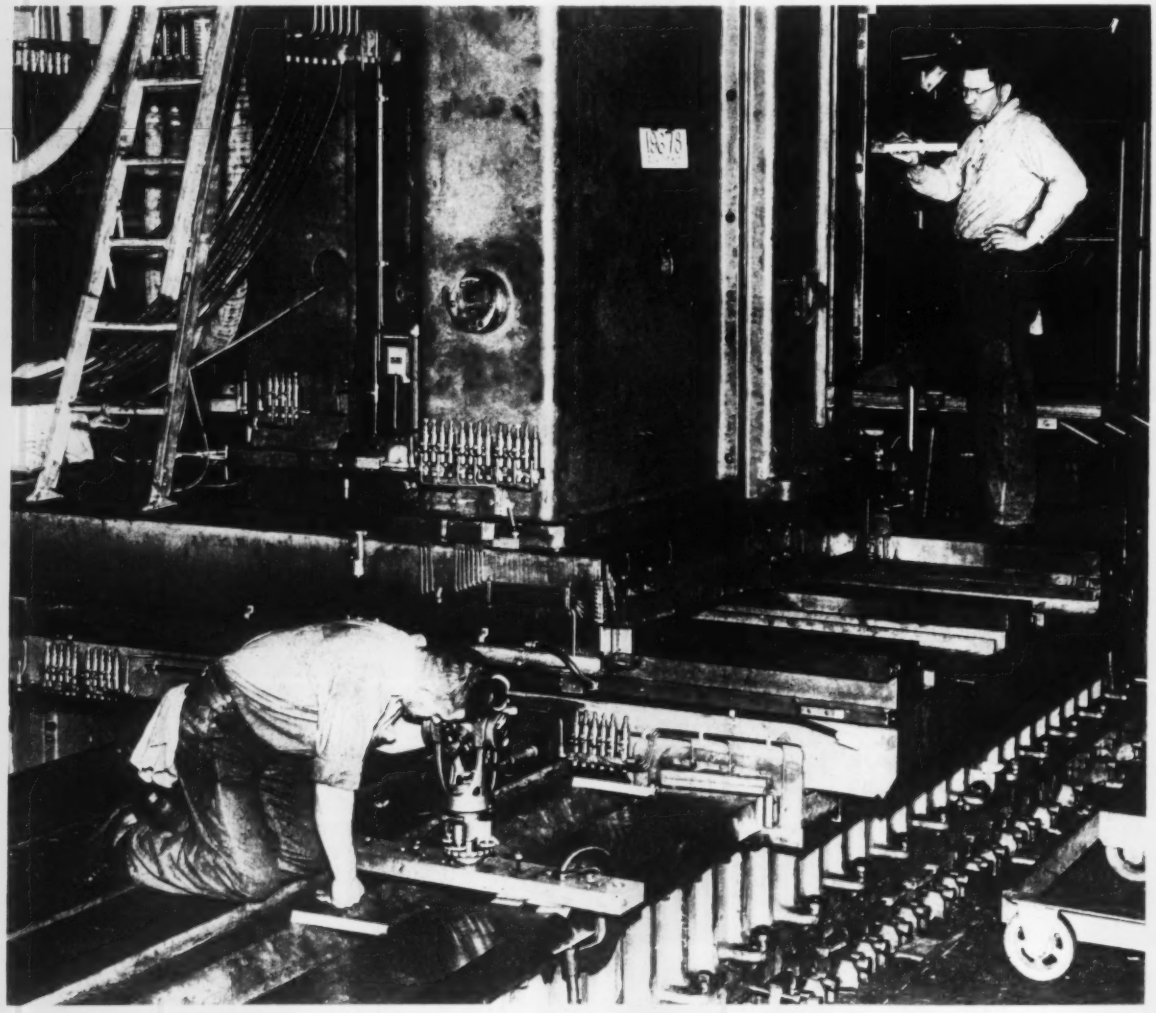
OPTICAL tooling saves 58 per cent of the time spent in leveling and aligning an Ingersoll, adjustable rail milling machine. It has cut 71 per cent off the time formerly needed to align a horizontal boring mill.

Better alignment also helps to speed machine installation in the customer's plant.

Massive beds, housings, and cross-rails for the custom-built machines must be fitted on Ingersoll's assembly floor, knocked down, then reassembled at the customer's plant.

By using the Brunson optical tooling in original assembly, each section can be checked for hair-fine accuracies. Chances of overlooking conditions requiring corrective measures are greatly reduced. It means that the time needed for reassembly and alignment in the customer's plant is reduced to a minimum. The end result is a bet-

After the machine bed has been leveled, these men use optics to align the spindle sweep in relation to the bed



By KENNETH FROMMER
Methods Dept.
Ingersoll Milling Machine Co.
Rockford, Ill.

ter machine that can produce parts to closer tolerances.

• **Procedure**—Here's how machine beds are leveled and checked for straightness.

The transit is set up near the center of the assembled bed sections. A target, a small plastic ring with a crosspattern on it, is placed on the bed. The operator aligns the transit crosshairs with the target pattern. Bed adjustment is made by raising or lowering jacks.

After the first adjustment is complete, the operator moves the target to successive points along the bed, repeating the alignment procedure each time.

Optics has a solid advantage over some other systems in making successive alignments. Once the transit is set, it is never moved. Each point on the bed is determined with reference to the transit. In previous systems, the second point was checked against the first, the third against the second, and so on. Any error made in the setup was compounded on down the length of the bed.

To check bed straightness, the operator sets up a telescope at one end of the bed and the target at the other. After the target and the scope are aligned, the target is moved toward the scope. Any lateral aberration of the bed is immediately apparent.

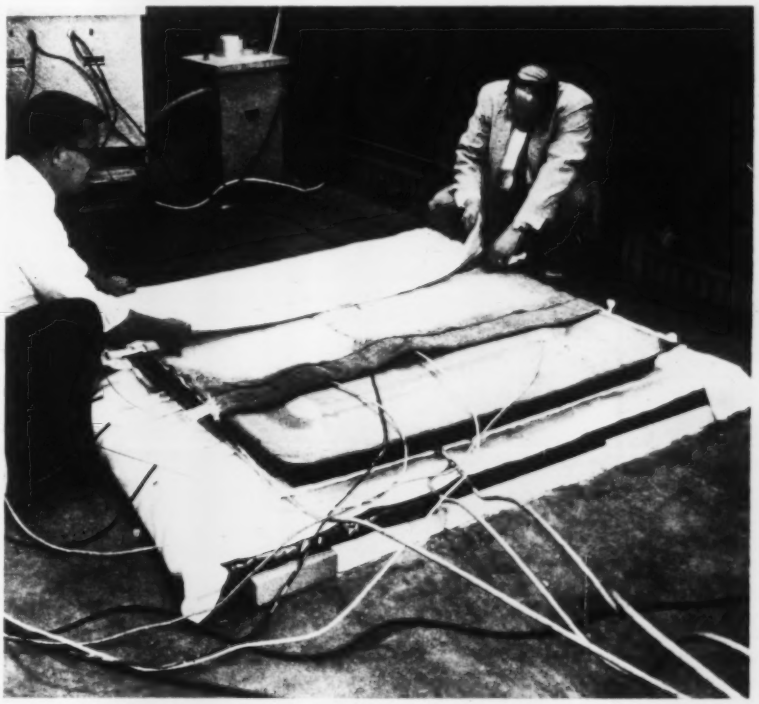
• **Another Plus**—Optics also assures that the machine housing is perpendicular to the bed.

The operator establishes a reference point with the scope, making the line of sight parallel with the machine bed. Then an optical-square transit is set up (it can be sighted from the side as well as the end) so the scope's line of sight intersects the side lens. This puts the two instruments in direct alignment.

Sighting through the end of the optical square transit, the operator guides the machine adjustment until the two lines of sight, hence the two machine parts, form a 90 degree angle.

Stainless Steel Honeycombs Are Brazed in a Blanket

Rohr engineers are arranging silica insulated heating blankets around a welded steel envelope containing honeycomb part. Method is said to reduce processing time 70 per cent



AN ELECTRIC blanket technique is the key to a new way to braze stainless steel honeycombs. It promises faster production, greater economy, and flexibility.

Cycle time is cut from 23 hours (using a furnace) to 6 hours. Other advantages: Closer temperature control and improved brazes in complex shapes.

• **A high temperature wire mesh heater blanketed by silica insulation furnishes the heat for brazing.**

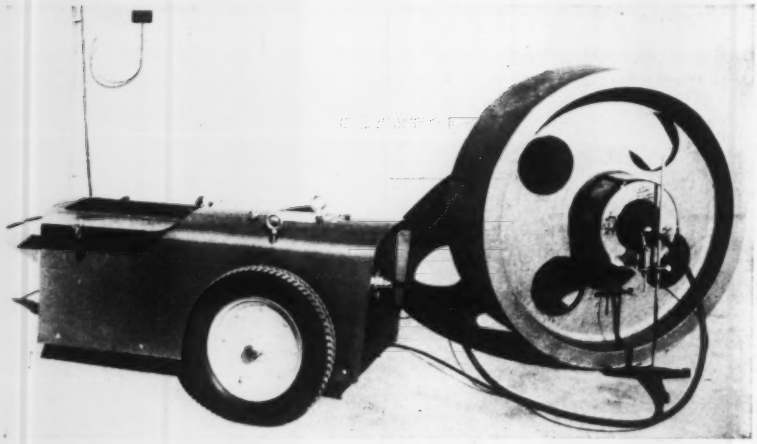
Rohr Aircraft Corp., Chula Vista, Calif., and Electrofilm, North Hollywood, Calif., collaborated to solve the problem. They sought to avoid the use of hefty, expensive furnaces and long production times which are necessary with older methods. (A large furnace may take 15 million Btu just to reach brazing temperature.)

To prevent oxidation during brazing, production panels are welded into a steel container or envelope filled with argon gas and exhausted during brazing. Each panel or sandwich has a honeycomb core sandwiched between layers of copper-lithium-silver brazing alloy and top and bottom skins.

For an effective bond, temperature must be held at 1650° F, then lowered to 1450° F before unloading. Normally, the load is again raised to 1000° F to age the stainless. The blanket technique responds comparatively fast to temperature adjustments because of its low mass.

"In August, we plan to use this method for limited production of stainless honeycomb structures for Convair's B-58 Hustler, a McDonnell fighter, and the B-70 chemical bomber," says Rohr.

This Cobalt 60 Carrier Is Controlled



From a Safe Area

The radioactive material is used for radiographic testing of steel castings, forgings, and weldments. Method has several advantages

HANDLING of cobalt 60 is easier, faster, and safer with the remotely controlled mobile carrier used at National Supply Co., Torrance, Calif.

The radioactive material is used to test steel forgings, castings, and weldments.

The mobile unit has a flexible projector tube in which a cobalt pill is guided to the point of use from a lead storage safe. The control unit is on the end of a long flexible metallic cable which is unreeled to a safe distance from the enclosed testing area.

The projector tube is supported in position after the radiographic film is on the part to be tested.

A manually operated crank and gear wheel on the control unit operate a rack type chain drive which propels the pill through tubing to the point of exposure.

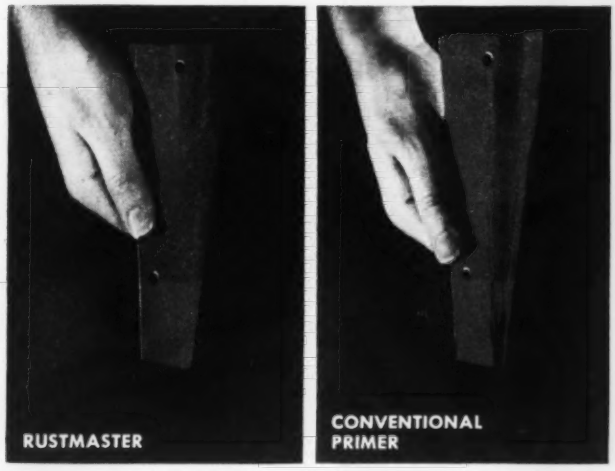
After exposure, the crank is used to draw the cobalt back into the lead storage safe. To increase safety, lights on the control unit indicate the position of the pill.

• **AEC Specifications** — National Supply built the outdoor enclosure to Atomic Energy Commission specifications. It has concrete walls 18 in. thick and 7 ft high. Large parts can be carried into the enclosure by truck through a gate, or by truck-crane over the wall.

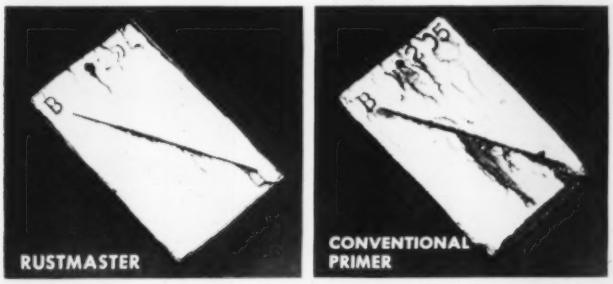
The new equipment widens the practical use of radiographic examinations of large steel parts by National Supply. Two other radiation sources are used to check the quality of smaller steel parts.

Revolutionary Metal Primer...

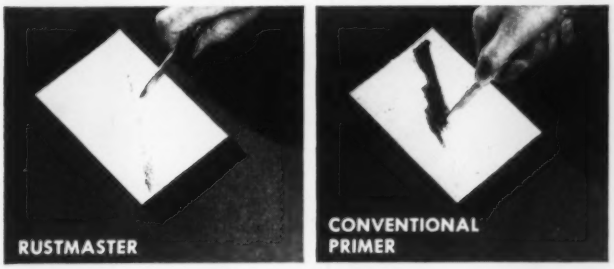
RUSTMASTER



PROOF OF BETTER ADHESION—Rusted metal sheets were coated with primers and finish coats and exposed to weatherometer at 95 degrees and 95 per cent humidity for 300 hours. They were then subjected to severe bending in conical mandrel. Conventional primer cracked and broke away from surface. RUSTMASTER showed little sign of stress revealing far greater flexibility and adhesion.



PROOF OF BETTER ENDURANCE—In salt spray test, metal panels were coated with primers and finish coats and scribed to bare metal. Panels were then subjected to salt spray test for 500 hours. "Conventional" panel had severe blistering and under-film corrosion. RUSTMASTER restricted corrosion to scribed area, proving higher anti-corrosive qualities.



PROOF OF BETTER PROTECTION—Primers were applied to rusted metal panels and exposed to weatherometer test for 1600 hours. Scraping of both panels with knife blade showed that conventional primer pigment remained on the surface of the rust. RUSTMASTER vehicle and anti-corrosive pigments were bound into the rust, proving deeper penetration, more protection.

Penetrates rust faster and more thoroughly, dries faster, and gives better protection

Secret to the remarkable RUSTMASTER performance is a special surface wetting additive*. This additive gives the vehicle and pigment in RUSTMASTER superior penetrating power through rust which remains after average surface preparation.

This protective primer pierces tight rust layers and actually forces its way to the metal surface. Once there, it bonds firmly with the substrate, driving out corrosive moisture and air remaining in microscopic pores. This bonding action produces an extremely strong, flexible, durable finish.

The swift penetrating action of RUSTMASTER makes it fast-drying, too—waiting period before applying finish coat is now hours instead of days.

So successful have been exhaustive laboratory tests, that RUSTMASTER wetting agent is now being extensively field tested by the Lead Industries Association in formulas for Red Lead and Modified Red Lead Primers, and is included in experimental formulations recommended by the Association to industry for field testing.

Write on your company letterhead for complete information.

For most efficient protective maintenance systems, use RUSTMASTER with recommended Glidden finish coatings.

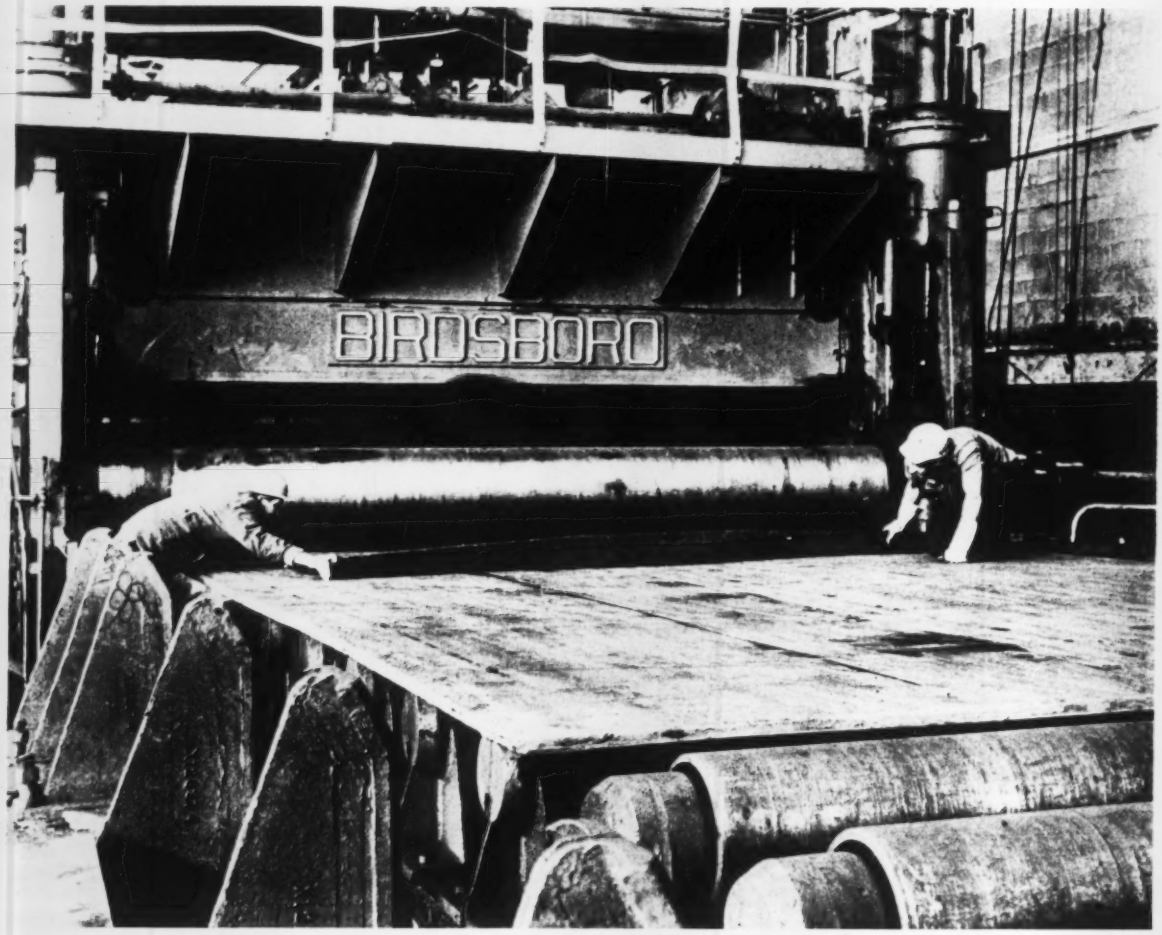
*Patent applied for

QUALITY Glidden PRODUCTS — General Paint

COATINGS FOR EVERY PURPOSE

The Glidden Company
INDUSTRIAL PAINT DIVISION
900 Union Commerce Building
Cleveland 14, Ohio
In Canada: The Glidden Company, Ltd., Toronto, Ontario

Big Levelers Make Plates Flat



Operator and helper check flatness of plate 200 in. wide before it enters leveler. Information is used to help determine right setting for work rolls

Closer tolerances being demanded show need for such equipment. Husky machines flatten four pieces per hour vs. one a day by previous methods

NEED steel plates flatter than those made to commercial tolerances? They're available, thanks to outsize roller levelers.

Two of the machines roll plates to almost perfect flatness at Lukens Steel Co., Coatesville, Pa. They're made by Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.

• The trend in ordering is toward flatter plates. Fast, effective mechanical leveling is a must.

Plates can often be shipped directly from the rolling mill, but some must be heat treated. That causes distortion, which must be removed with mechanical equipment.

An increasing number of orders call for tolerances closer than commercial standards; in some cases, almost perfect flatness is requested. But that isn't practicable, the company says. A maximum variation of $\frac{1}{8}$ in. in "dead flat" material is acceptable in the steel industry.

Usually, when plates are ordered from the mill, flatness is specified by standard commercial tolerances. In a plate $\frac{1}{2}$ in. thick and 108 in. long, a 1 in. level variation is often allowed.

• The machines are faster than

This Standard Oil product made better grinding possible at Cessna

Aircraft Company's Industrial Products Division licked three problems with ARGON Oil No. 4

Situation: A fluid used in grinding operations at this Cessna plant at Hutchinson, Kansas, was creating three problems:

1) It washed the lubricant from regulator wheels and grinding fixtures, causing them to freeze.
2) It caused build-up of deposits.
3) It stripped paint from machine surfaces.

What was done: Cessna management called in a Standard Oil lubrication specialist who recommended ARGON Oil No. 4 in ratios of 100 and 150:1 for test. The coolant was tested in two centerless grinders for two months.

What happened: All three conditions which were hampering operations were cleared up when the switch was made to ARGON Oil No. 4. Cessna also found that work remained rust-free after passing through the machines, something that had not been the case before. They also found that the coolant didn't foam. With no foam, more of it stayed on the wheel, resulting in cooler operation. Faster cuts were obtained with finer wheels. All 12 grinders in the Cessna shop were then converted to ARGON Oil No. 4.

What you can do: Get more facts about ARGON Oil No. 4 from the Standard Oil office near you in any of the 15 Midwest or Rocky Mountain states. Or write **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**

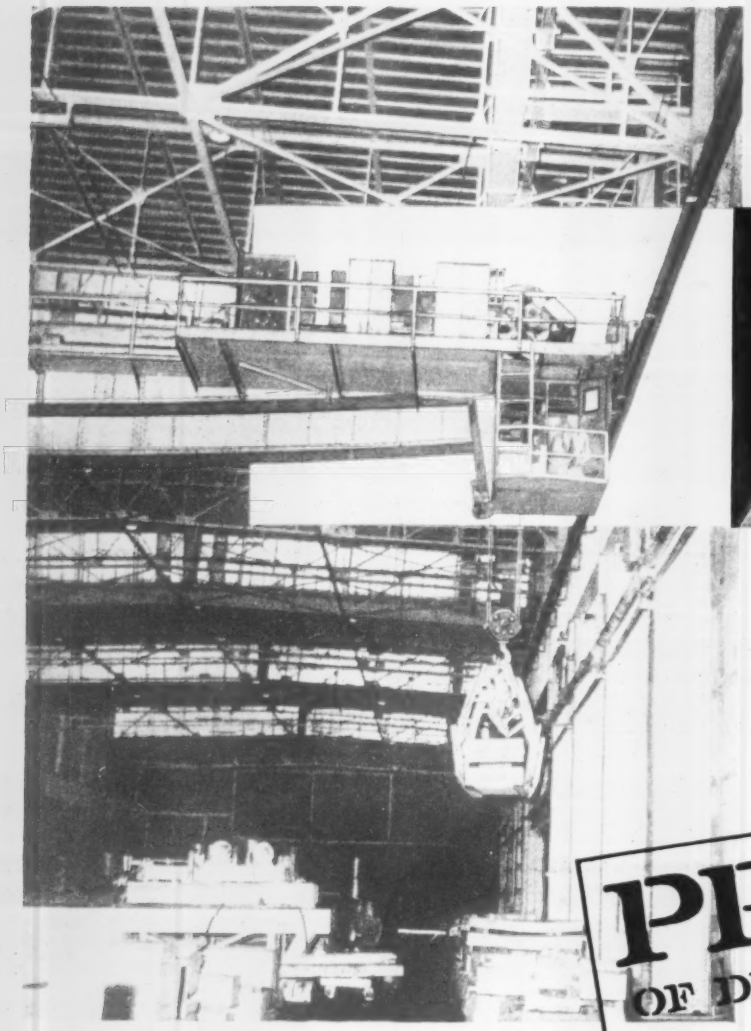
Quick facts about **ARGON Oil No. 4**

• Clear, transparent fluid • Able to control corrosion and rust on work and machines • All chemical. Does not support bacteria growth • Unaffected by humidity • Fire resistant • Odorless

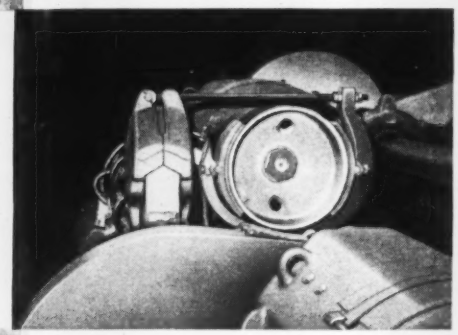
Jerry Croes, Standard Oil staff engineer, Paul Hoyer, Cessna section superintendent and Bill Ray, Standard Oil lubrication specialist (l. to r.) inspect rust-free finish after grinding with ARGON Oil No. 4 while J. E. Petrie (far left), operator, looks on. Both Jerry Croes and Bill Ray have plenty of experience in this sort of work. Jerry has been at it for 16 years. He has an engineering degree from South Dakota School of Mines & Technology and has completed the Standard Oil Sales Engineering School. Bill has six years service working with industrial customers.

You expect more from **STANDARD** *and you get it!*

Cutler-Hammer 505 Mill Brakes set new performance records at Inland Steel



Cold Strip Finishing
Mill Crane 35B



This 16" Cutler-Hammer 505 Mill Brake was installed in 1954, first to be used by Inland Steel. Service records show nine months passed before the brake required an adjustment of the shoe clearance. To date the original linings and wheel are still in service.

PROOF OF DEPENDABILITY

Here's positive *proof of dependability* . . . proof that Cutler-Hammer 505 Mill Brakes work better and last far longer even under the most severe operating conditions. Why take chances with costly production interruptions caused by frequent mill brake service requirements? Install dependable, service-proven Cutler-Hammer 505 Mill Brakes and be sure. For complete information, write today for Bulletin 505-M213. Cutler-Hammer Inc., Milwaukee 1, Wisconsin.

CUTLER-HAMMER

CUTLER-HAMMER CONTROL

Cutler-Hammer Inc., Milwaukee, Wis. • *Division:* **Airborne Instruments Laboratory.** • *Subsidiary:* **Cutler-Hammer International, C. A.**
Associates: Canadian Cutler-Hammer, Ltd.; Cutler-Hammer Mexicana, S. A.; Intercontinental Electronics Corporation.

previously used leveling methods; labor and maintenance costs are lower.

Each leveler requires only an operator and one helper. Making three passes per plate, the two men can average four leveled plates an hour. By the previous method, it took up to 8 hours for one plate.

The machines are rugged and accurate. But they're no more difficult to maintain than other mill equipment.

Every three months, rolls are removed for inspection. They're cleaned, polished, and replaced in less than 36 hours. Once a year, bearing and power train components are cleaned, inspected, and re-lubricated.

• The company uses two of the machines. One accommodates widths up to 160 in. The other takes plates as wide as 200 in.

The 200 in. unit has five upper and four lower work rolls. It handles mild steel plates up to 3½ in. thick, armor plates up to 2 in. thick, and ductile alloys 2 to 3 in. thick, depending on yield strength.

The 160 in. leveler, with three upper and two lower work rolls, takes plates up to 1¾ in. thick.

Both machines turn out almost perfectly flat plates. The time and number of passes required depend on the thickness, composition, and original curvature.

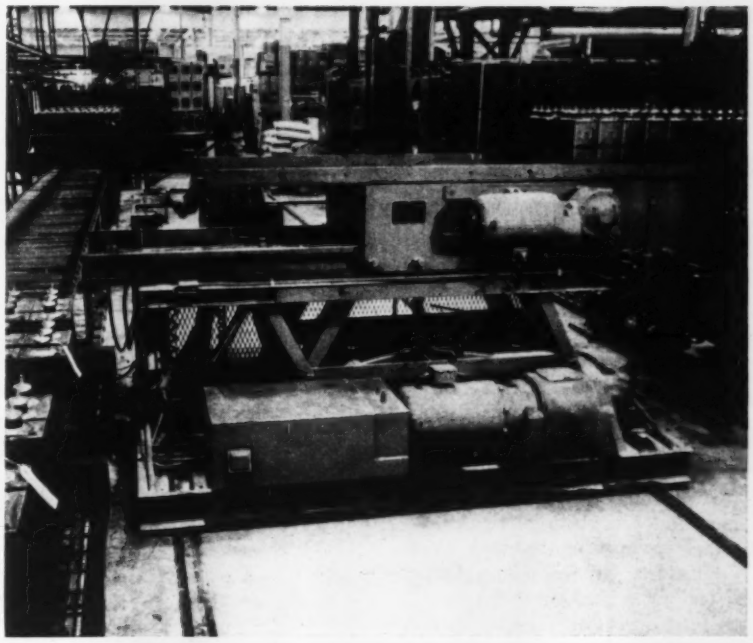
• Retractable work rolls give the larger unit more flexibility.

After each plate is heat treated, it is sent to the leveler on a roller feeder table. Accurate roll clearance levels the plate over its entire width. The finished piece is delivered to a 45 ft runout table.

Work rolls are supported by backup rolls to maintain the right clearance and reduce deflection. Space between upper and lower rolls is set for the level thickness of the plate by a mechanical screw drive.

All nine rolls are used on plates up to 1½ in. thick. For heavier pieces, two upper and two lower rolls are withdrawn, doubling the distance between roll centers.

Roll speeds vary from 19½ fpm, for the thickest plates, to 39½ fpm when thinner plates are rolled. Minimum thickness: ½ in. for clad steel, ⅝ in. for carbon steel.



Semiautomatic unit (above) ends manual handling and replaces three men with one

Pallet Transporter Trims Manhour Costs

A SEMIAUTOMATIC pallet transporter has practically eliminated manual handling and made it possible to replace three men with one at the Bloomington, Ind., plant of Westinghouse Electric Corp.

It's being used to process capacitors. One operator serves three parallel banks of Stokes vacuum ovens and impregnators.

Capacitors arrive from the testing area and are banded together on steel pallets.

• Work Sequence—The transporter receives the pallets from a roller conveyor and moves them to an impregnator. While one pallet load is being processed, the unit continues to load or unload other pallets in the processing cycle.

Each of the three banks consists of two impregnators and one oven. In serving them, the transporter is automatically positioned at the various stations and levels after the required phase has been activated.

Electric and hydraulic controls power the unit in four directions: Traverse, lift, side shift, and roll-on-roll-off.

Lateral movement capacity is 12,000 lb. Lift capacity is 3000 lb. Lift speed is 3 ft per minute and traverse speed is 31 ft per minute. The unit is made by Special Products Div., Colson Corp., Somerville, Mass.

Scrap Handling—Problem or Profit?

Mechanized chip removal is faster and cleaner than manual methods. Conveyors often pay for themselves with reduced manpower and machine downtime. They save floor space and upgrade salvaged material. Choice of hinged pan conveyors, bucket elevators, or vibrating troughs depends on scrap volume and value and arrangement of machines

IS SCRAP handled in your plant by 20 men with baskets, or by one man and a conveyor system?

Automatic conveyors for scrap handling are gaining popularity in metalworking plants, says Walter G. Engler, vice president, Gifford-Wood Co., Hudson, N. Y.

Reasons: They reduce machine downtime and labor cost (both run high in manual processing). They take scrap out of production areas rapidly. They also permit improved efficiency in the use of plant space.

• Design depends on scrap volume, value, and the cost of manual processing.

In weighing benefits and initial cost of a conveyor system, each company must consider daily scrap output, its salvage value, and the type of equipment needed for manual or mechanical processing. Production time is lost when machines are shut down for cleaning. And labor isn't the only cost in manual handling; trucks, tote boxes, cranes, and slings must be used.

The conveyor system can be simple or complex, depending on the job. It may collect large amounts of scrap from each machine and deliver it to conveniently located containers. Or it may pick up scrap as it's produced, take it through several processing operations, and dump it in storage bins, railroad cars, or trucks.

Some machines turn out enough scrap to justify separate conveyor systems. Others, in rows or banks, can be adapted to discharge scrap into a common conveyor system.

• The mechanized system is effective in scrap processing and coolant reclamation.

Processing of scrap for resale is more efficient with a mechanized system. Equipment usually includes a high speed centrifuge for oil extraction, and crushing equipment that reduces scrap to uniform size. It may include a baler.

In some plants, the dollar value of reclaimed coolant justifies installation of a scrap handling system. Used coolant is collected in sumps under the conveyors, piped to clarification and filtering units, then returned to the supply tank for re-use.

• Three types of equipment are available: Hinged pan conveyors, bucket elevators, and oscillating troughs.

Conveyors can be adapted to any scrap handling problem, whether

Horizontal feeder conveyors catch chips as they fall from two lathes. Collecting conveyor (center) carries the chips to a loading chute

material movement is horizontal, vertical, or inclined.

The hinged pan conveyor, most popular for scrap handling, consists of pans, connected by hinge pins to matched strands of roller chain. All normal wear is restricted to rollers and bushings on the hinge pins.

Each conveyor is self-contained. Head and tailshaft assemblies are mounted on a structural steel framework. The unit is usually installed in a trench under the floor.

When the conveyor has an inclined section, steel cleats in the pans prevent scrap from sliding backward. Pan joints leave no opening during movement, and sharp edged scrap can't become wedged. Side flanges form a continuous wall and prevent scrap from spilling over.

Bucket elevators move material vertically, or up steep inclines. They're not often used to take scrap directly from machines. Most popular use: Elevation of scrap from collecting conveyors to storage bins, or transfer of material from one floor to another.

Oscillating, or vibrating trough conveyors move scrap horizontally. Regenerative force of coil springs helps the drive motor move material upward and forward.

• An automatic conveyor system can eliminate machine shutdowns for scrap removal.

Conveyors remove chips as fast as they fall from 60 in. grooving lathes at General Electric Co.'s Large Steam Turbine-Generator Dept. plant at Schenectady, N. Y.

Chips falling through the lathe bed are deflected by skirts into a horizontal, hinged pan conveyor that runs the length of the bed. They're carried to the tail end of the lathe and dumped into an inclined, hinged pan conveyor section that lifts them to a chute above two tote boxes. The chute is divided, so one box can be removed while the other is being loaded.

Formerly, an overhead crane lifted a metal cover from a tote box under the lathe, removed the box, set another in place, and replaced the cover. The operation required a 30 minute shutdown and had to be repeated two or three times a day.

• Mechanization often pays for itself in manhours saved.

An underfloor conveyor system saves 800 manhours a day at U. S. Hoffman Machinery Corp., Auburn, N. Y. All phases of scrap handling are mechanized. The system includes conveyors, coolant reclaiming units, chip crushers, and storage bins.

Chips and coolant from 40 machine tools are dumped into three hinged pan feeder conveyors. Hinged pan collectors and a pneumatic conveyor deliver the chips to storage bins or railroad cars.

Oil is collected in troughs under the conveyors, piped to a flotation unit, where it's reconditioned, and returned to the coolant supply tank. Heavy material settles out in a collecting unit; fines are "foamed out" in a special compartment. Foaming action also aerates the coolant and helps prevent it from becoming rancid.

• Conveyors provide faster scrap removal from production areas.

In a large midwestern plant, 5 tons of scrap an hour are collected from machines over a wide area.

Five oscillating conveyors, under the floor, collect scrap from machine tools. One of the five also serves as a collector, carrying scrap from the building. A short transfer conveyor deposits the scrap on an inclined oscillating conveyor, which dumps it in the hopper of a continuous bucket elevator. The scrap is then carried to a storage bin for carloading.

The system accommodates a wide range of loads. Example: At one point, about 250 lb per hour is fed into the system; at another point, input runs as high as 1250 lb per hour.

• Plant space can be used more efficiently when scrap handling is mechanized.

Usable space was increased 15 per cent with underfloor scrap conveyors in a new General Electric plant at Appliance Park, Louisville. Space formerly used for access lanes and bins is available for machines.

Chips from 54 punch presses are collected by seven feeder conveyors. They're removed from the building by a series of conveyors and stored in a chute for carloading.

Sheet Handling Problems Ended by Magnetic Rolls

Magnetic rolls have eliminated damage and maintenance problems in sheet handling at Rheem Mfg. Co. Inc., Linden, N. J.

A series of small diameter permanent magnet units (called Eriez Magna-Rolls) replaced belts formerly used at the discharge end of coating machines handling 16 to 26 gage sheets. The sheets are 44 x 72 in.

The units convey sheets out of coating machines and feed them to wickets which carry them through an oven. The sheets come directly from lithographing presses.

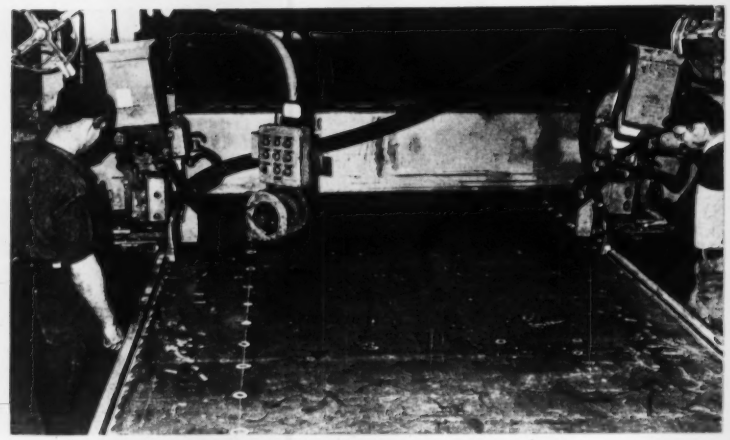
The use of another material at this critical point was found to cause slippage, marred sheets, and a buildup of paint on the belts. Frequent cleaning was necessary.

The new units carry the sheets securely, without risk of slippage and damage, and no paint accumulates on their hard steel surfaces.

Magna-Rolls are made by Eriez Mfg. Co., Erie, Pa.

PENCIL THIN QUARTZ LAMP gives as much light as the 1500 watt industrial lamp, says General Electric Co., Cleveland. A new principle called the iodine cycle eliminates blackening, permitting the space saving lamp to give 10 per cent more light during its life. The firm claims its Quartzline lamps will make possible more efficient commercial and industrial lighting

Machine Welds 100 ft Girder in 8 Hours



Same Job Used to Take 60 Hours

By cropping 52 hours from the time required to seamweld a representative workpiece, this two-headed machine shattered a production bottleneck. Part distortion also is cut

BOX girders for overhead traveling cranes used to be set up and then repositioned three times before operators could weld four seams that hold the webs to top and bottom cover plates.

Now the girders are set up and then turned over once.

Welders used to make two passes on each seam, the first with a 3/16 in. electrode, the second with a 5/16 in. This was done to minimize distortion.

Now a machine welds two seams in a single pass.

• A $30,000 investment was recovered in less than a year.

At Morgan Engineering Co., Alliance, Ohio, engineers working on an over-all cost reduction program put the spotlight on a welding bottleneck. The box girders, 50 to 120 ft long, were being held up an inordinate time while welders carefully laid four seamwelds, each the total length of the girder.

The girder was placed in a pair of 45 degree stands so the weld joint between the web and flange could be welded downhand. This meant that after each seamweld was completed, the girder had to be repositioned—a total of four setups. Positioning alone took the services of two men for 7 hours.

• The complete job now takes only an hour more than handling did.

The girder is placed on its side under a tandem-head traveling welding machine built by Morton Mfg. Co., Muskegon Heights, Mich. Operators position the heads above the weld joint and start the machine. Traveling at a rate of 17 in. a minute, the two Linde heads lay down 3/8 in. fillet welds on both seams. The machine uses submerged melt welding. Rollers riding the outside of the flange and the surface of the web guide the heads on their carriages to accommodate any variations in the part.

The machine has a track travel of 125 ft. Welding current is supplied by two Hobart motor-generator units (900 ampere, constant potential).

Other advantages of the system: The speed of welding and the uninterrupted arc minimize the total time of heat input and hold distortion to a minimum. Leadtime for the parts has been cut, and the shop has more hours available for other work.

COPPER-COATED Thomas Strip coils, 1½" wide, are made into the intricate television control part shown in the inset.

Thomas Strip Is Cost-saver at TV Parts Plant

For 20 years, copper-coated Thomas Strip steel was known at Chicago Telephone Supply Corp.'s Elkhart, Ind., plant as the metal to conquer a metal-working plague—scalloping during deep draws.

Now the precision-rolled product of Pittsburgh Steel Co.'s Thomas Strip Division has new claims to fame. It makes possible a one-piece, extruded and stamped mounting plate used to assemble and connect the variable resistor to the television set chassis.

Previously, Chicago Telephone made the grounding plate and mounting bushing in two pieces. The bushing being a relatively expensive brass mounting device, Thomas' copper-coated makes it possible to blank out the intricate part, punch a hole in its center and then extrude the edge of the hole into a load-bearing neck. All this is done at high production speeds with progressive blank and form dies.

In many applications at Chicago Telephone, similar severe demands are imposed. Examples:

▶ **THICKNESS TOLERANCE**—As tight as ±.0005". A variation of ±.001" can cause a potentiometer cover to be off .005".

▶ **UNIFORM TEMPER**—Some parts are made at speeds up to 400 units per minute. Any wide hardness deviation results in troublesome forming variations.

▶ **SHEARABILITY**—Punched and blanked parts have tolerances so snug that the slightest burr prevents proper assembly.

▶ **UNIFORM COPPER COATING**—Copper acts as a necessary die lubricant and a base for nickel plating. When the mounting plate was made from plain steel, die life ranged from 40,000 to 62,000 units. Now, with the more difficult mounting plate, die life averages 250,000 units between re-grindings.

Whether you need dimensional accuracy, surface, temper, aid to die life, chemistry or design and production advantages, you'll find them in Thomas Strip. It is a controlled rolled steel, plain or in a variety of electrolytic coatings of copper, brass, nickel, zinc, tin, chrome and lacquer with a full range of tempers, widths and finishes. Thomas Strip also is available with an attractive but durable pattern rolled right into its surface. For details, contact any sales office. Do it today.

Thomas Strip® Division

Pittsburgh Steel Company

Grant Building · Pittsburgh 30, Pennsylvania

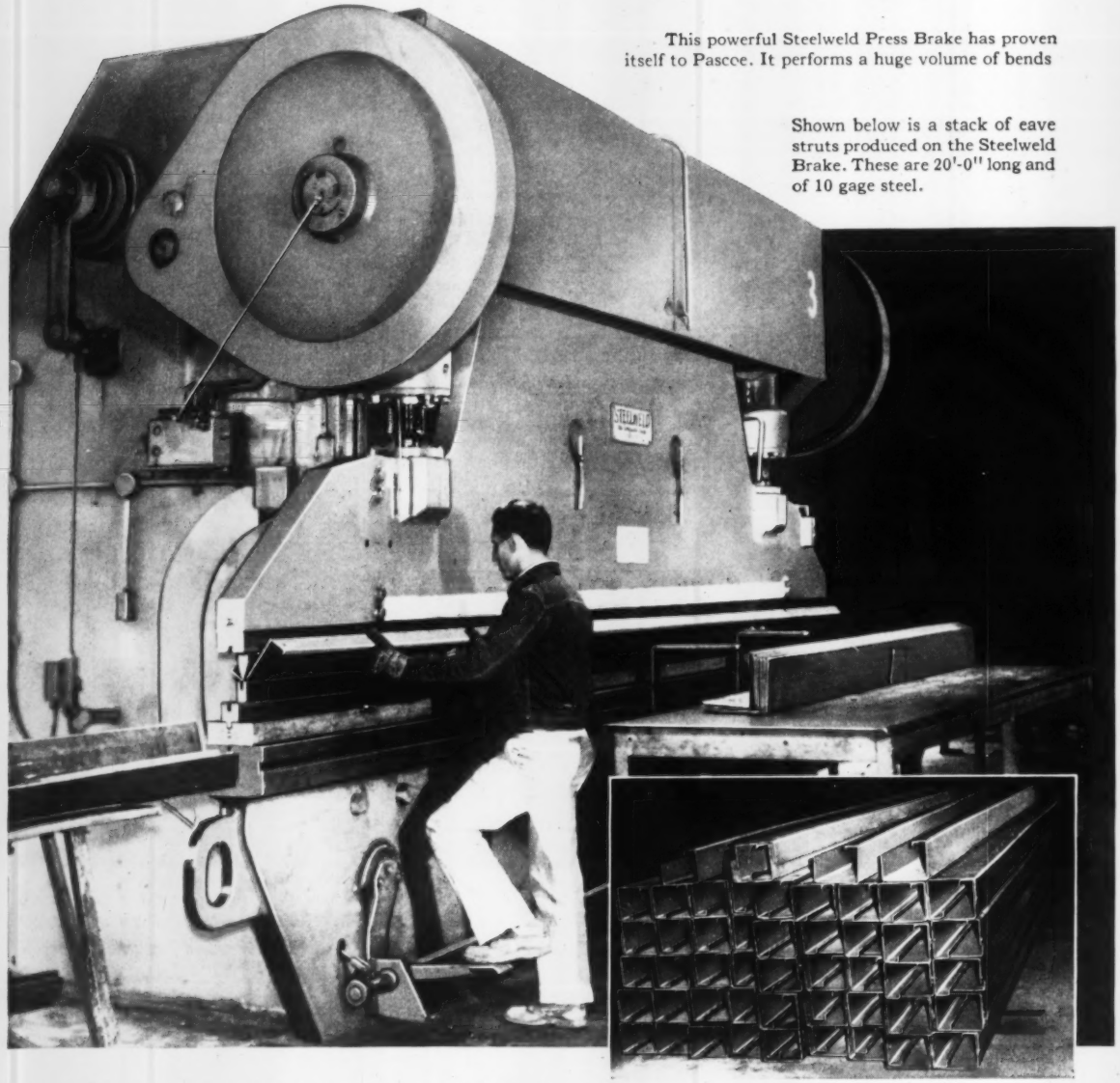
District Sales Offices:

Atlanta	Detroit	Philadelphia
Chicago	Houston	Pittsburgh
Cleveland	Los Angeles	Tulsa
Dayton	New York	Warren, Ohio

STEELWELD BRAKE
AIDS PASCOE BUILDING PRODUCTION

This powerful Steelweld Press Brake has proven itself to Pascoe. It performs a huge volume of bends

Shown below is a stack of eave struts produced on the Steelweld Brake. These are 20'-0" long and of 10 gage steel.



AN important manufacturer of prefabricated steel buildings on the West Coast, the Pascoe Steel Corporation, Pomona, California, keeps their Steelweld Press Brake going full tilt in order to keep up with the production schedule.

The brake normally handles steel up to 20'-0" x 3/16", although occasionally 1/4" metal is formed. It has the speed and power to produce sharp accurate bends at a fast rate.

Despite all the work put through, only the meagerest amount of maintenance is required. For instance, the clutch has had to be adjusted only once, every eight-month period and this can be done in very few minutes.

Pascoe builds a complete line of pre-engineered buildings which are used for warehouses, light manufacturing, grain storage, auditoriums, aircraft hangers, etc.

Write for free copy of catalog No. 2023A

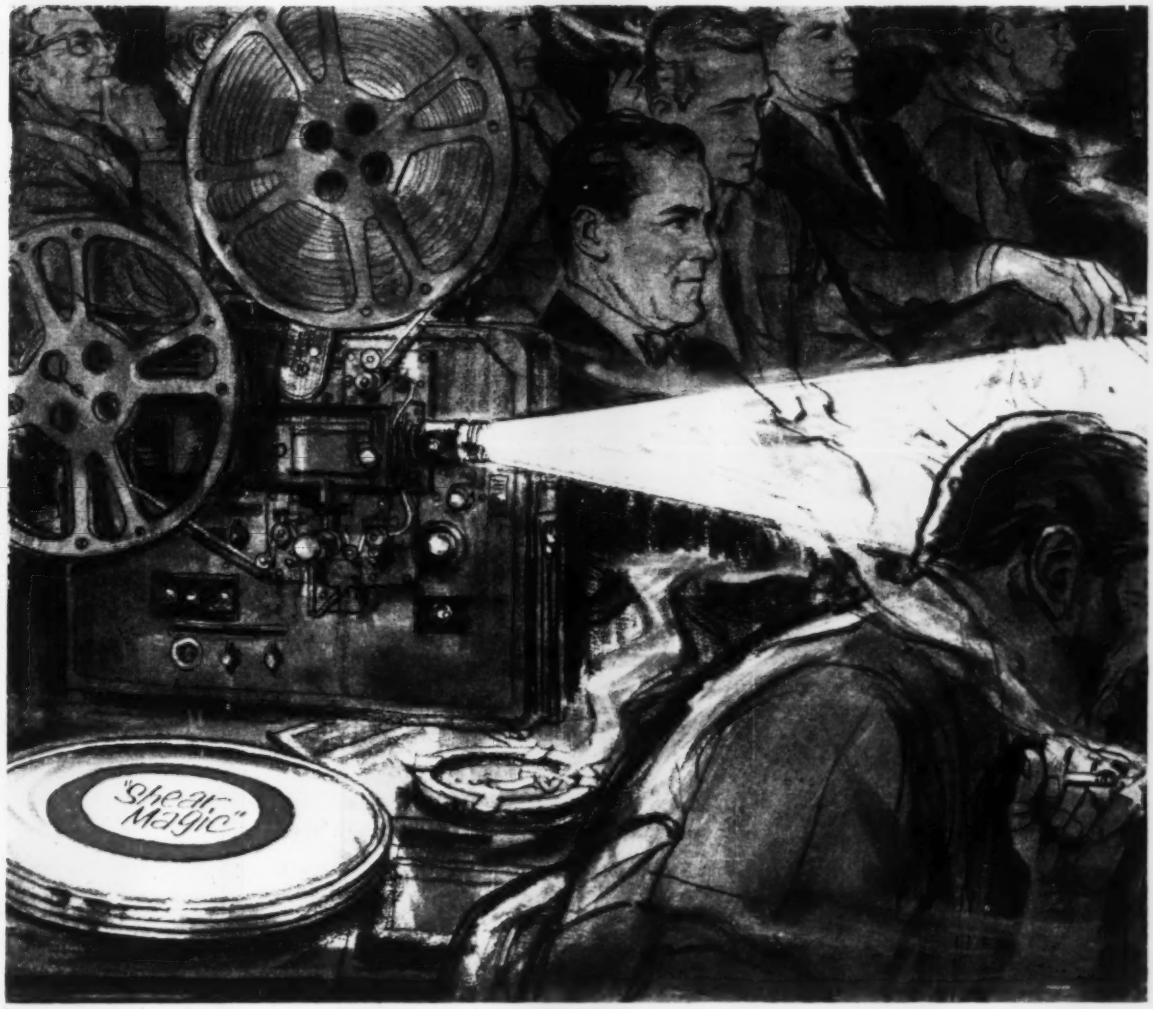
STEELWELD

Mechanical and Hydraulic

PRESS BRAKES

Steelweld Machinery includes: Mechanical & Hydraulic Shears and Press Brakes, One-, Two- and Four-Point Straight-Side Presses, Speed-Draw Presses.

THE CLEVELAND CRANE & ENGINEERING COMPANY • 7873 E. 281st STREET • WICKLIFFE, OHIO



You're invited to see how grease affects your profit picture

Texaco has produced a film called "Shear Magic". It explains why and how grease has kept pace with technical advances in your plant.

Like everything else, grease is no longer simple.

How could it be. In industry, heat is hotter and cold is colder. Speeds are faster, pressure heavier. All the more reason why you'll find this film interesting.

"Shear Magic" is not a sales film.

It is devoted entirely to helpful information about greases. You will see how only the right greases protect against heat, water, cold, dust, shock and other problems in a modern plant. You will learn how the right grease schedule – one planned exactly for your operation – can help you control costs.

If you'd like to switch off the lights and view this film, mail the coupon today.

TEXACO

Texaco Inc.
Room 2006, Dept. S-G-10
135 East 42nd Street,
New York 17, N. Y.

Please send me more information about a free showing of "Shear Magic" to my organization.

Name _____

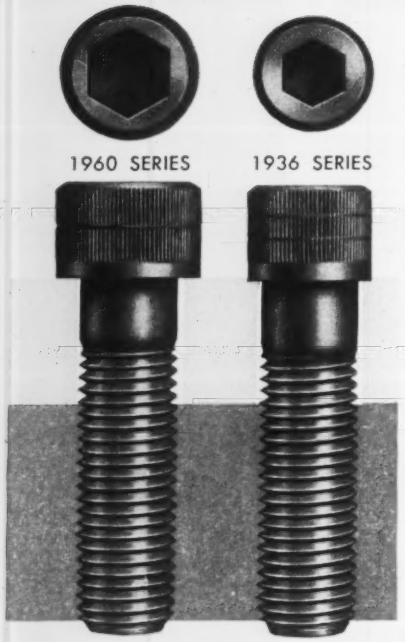
Company _____

Address _____

City _____ State _____

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

Allen's *New '60 Series* Socket Head Cap Screws



give up to 2⅓ times more load carrying capacity ...without indentation!

In Allen's new '60 Series, head diameter of sizes from ¼" up is now uniformly one and one-half times the body diameter. In many sizes (where this ratio was not called for by 1936 Series specifications) this will provide *more* under-the-head bearing surface, and a proportionate *increase* in clamping force. Loads are more evenly distributed, and the greater bearing area in many cases eliminates need for washers.

Socket sizes have been increased in many cases—greater wrenching area permits higher tightening torque—which resists fatigue failure, and lengthens the life of the threaded joint.

- A new 2-band knurl will identify all ALLEN Cap Screws (except Stainless Steel) that conform to the new '60 Series specifications. New labels on boxes will also identify these.
- The 1936 Series of Allen Cap Screws will continue to be available.

COMPARISON OF ALLEN 1960 SERIES AND 1936 SERIES SOCKET HEAD CAP SCREWS

SCREW SIZE	HEAD DIAMETER Minimum (inches)		BEARING SURFACE Minimum (square inches)		PERCENT OF INCREASE IN BEARING SURFACE[1]	TENSILE LOAD TO INDENT IN SOFT STEEL[2] (lbs.)		TORQUE INDUCED TENSILE LOAD TO INDENT IN SOFT STEEL[2] (lbs.)	
	1960 Series	1936 Series	1960 Series	1936 Series		1960 Series	1936 Series	1960 Series	1936 Series
¼	.365	.367	.044	.044	—	4,750	4,750	2,780	2,780
5/16	.457	.429	.070	.052	33	7,440	5,600	4,380	3,300
⅜	.550	.553	.111	.111	—	12,100	12,100	7,000	7,000
7/16	.642	.615	.140	.103	36	15,000	11,000	8,850	6,450
½	.735	.739	.183	.183	—	19,500	19,500	11,500	11,500
9/16	.921	.863	.293	.216	35	31,000	23,200	18,500	13,600
¾	1.107	.987	.424	.224	89	45,000	24,000	26,700	14,100
⅞	1.293	1.111	.585	.253	131	62,500	27,000	36,800	15,900
1	1.479	1.297	.768	.405	89	82,000	43,500	48,500	25,500

[1]Head tolerance revisions on Sizes #0 thru #10, ¼, ⅜, and ½ diameter have no significant effect on bearing surface or holding power of screws.

[2]Values based on .00025 inch indentation.

Ask your Industrial Distributor about ALLEN '60 Series Cap Screws. Write for samples and complete specifications. Ask for Bulletin G-25.

ALLEN MANUFACTURING COMPANY
Hartford 1, Connecticut, U. S. A.

Stocked and sold by leading industrial distributors everywhere

ALLEN HEX-SOCKET SCREWS HEAD

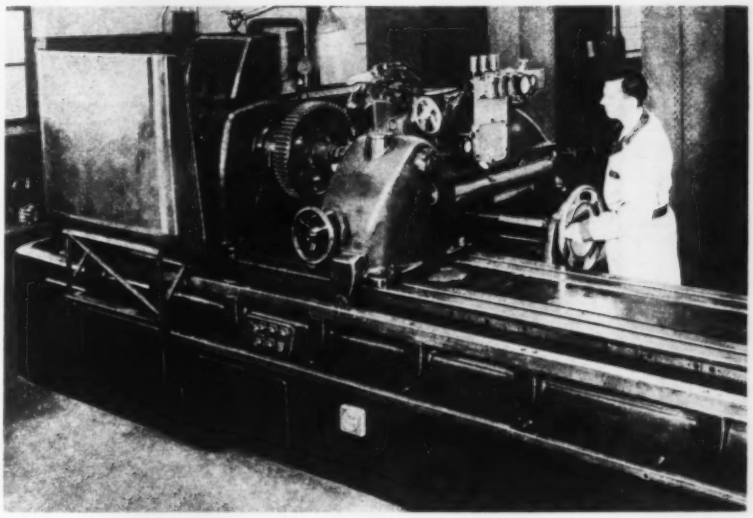
Method Enables Honing of Gears up to 200 in. OD

HARDENED spur and helical gears from 12 to 200 in. in diameter can be honed by a new method developed by National Broach & Machine Co.

The Red Ring gear honing process improved the sound qualities of gears by removing nicks and burrs, making small tooth form corrections, and improving surface finish.

In operation, an abrasive impregnated, gearlike tool runs in mesh with the work gear at crossed-axes relationship. A motor turns the work gear which drives the tool while it is traversed back and forth across the face of the gear.

The honing tool spindle is supported by a tilt mounting. That arrangement permits either constant pressure (controlled work pressure) or zero backlash (fixed center distance with predetermined pressure) honing methods to be selected by the user.



As applied to a prototype model (see illustration), the new process makes use of separate tool heads and feeding mechanisms that enable one large rotary machine to perform both gear tooth shaving and gear tooth honing.

For more information, *write* National Broach & Machine Co., 5600 St. Jean Ave., Detroit 13, Mich.

Tape Controlled Tool Holds 0.0001 in. Tolerance

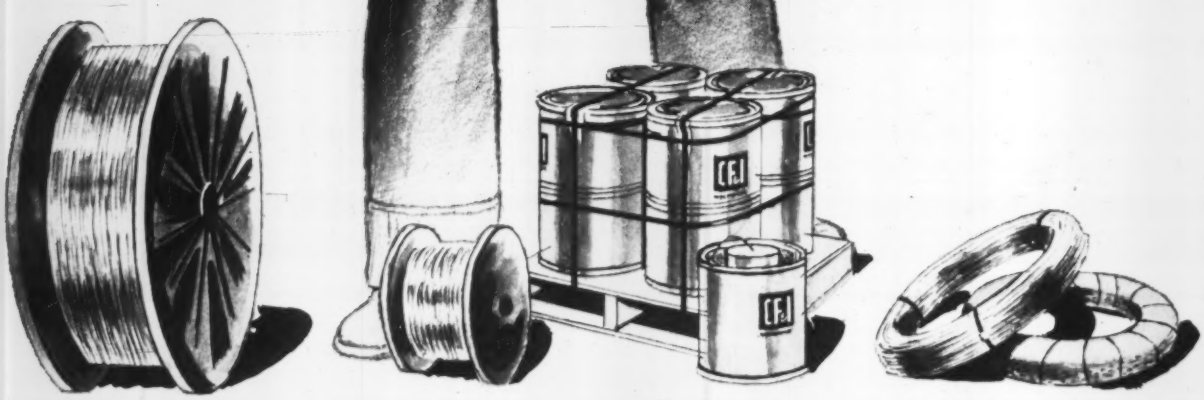
HERE is a numerically controlled, double spindle, turning and boring unit that will machine inside and outside contours of hemispheres, cylinders, and other related parts within repeatable tolerances of plus or minus 0.0001 in.

The tape controlled machine reduces tooling costs, increases production, and shortens the over-all manufacturing cycle when compared with conventional machining methods. It was built co-operatively by Heald Machine Co. and Bendix Aviation Corp.

In operation, one spindle of the machine tool machines the outside diameter and the other spindle ma-

(Please turn to Page 108)

CF&I



Reels
(500-800 lbs. capacity)

Disposable Spools
(5-70 lbs. capacity)

Fibre Drums
(250-600 lbs. capacity)

Standard Coils, paper-wrapped,
steel-strapped or wire-tied

WIRE . . .

PACKAGED for YOUR PRODUCTION

The CF&I Image represents the strength and dependability of all CF&I steel products. And for CF&I Steel Wire, this symbol reflects top quality. CF&I is the leader in designing packaging to reduce our customers' costs.

This is important to you! When you buy CF&I Steel Wire, you cut production costs—save time and money—by specifying the package that works most economically for you. You can choose a CF&I wire package that gives you the following special benefits:

- *reduced downtime through extra long lengths of wire*
- *simplified inventory control*
- *fast, economical in-plant handling*
- *continued cleanliness of the wire*

CF&I Steel Wire is available in a wide variety of gages and finishes. Whatever your wire requirements, be sure to order from CF&I. All orders—from a coil to a carload—will arrive at your plant packaged for your production. Let our nearest sales office know your requirements.

CF&I-WICKWIRE WIRE

THE COLORADO FUEL AND IRON CORPORATION

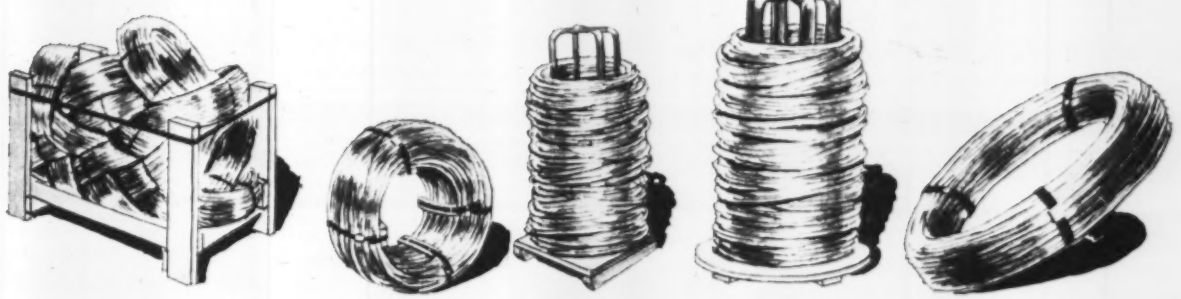
In the West: **THE COLORADO FUEL AND IRON CORPORATION**—Albuquerque • Amarillo • Billings • Boise • Butte Denver • El Paso • Ft. Worth • Houston • Kansas City • Lincoln • Los Angeles • Oakland • Oklahoma City • Phoenix Portland • Pueblo • Salt Lake City • San Francisco • San Leandro • Seattle • Spokane • Wichita

In the East: **WICKWIRE SPENCER STEEL DIVISION**—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans New York • Philadelphia

CF&I OFFICE IN CANADA: Montreal

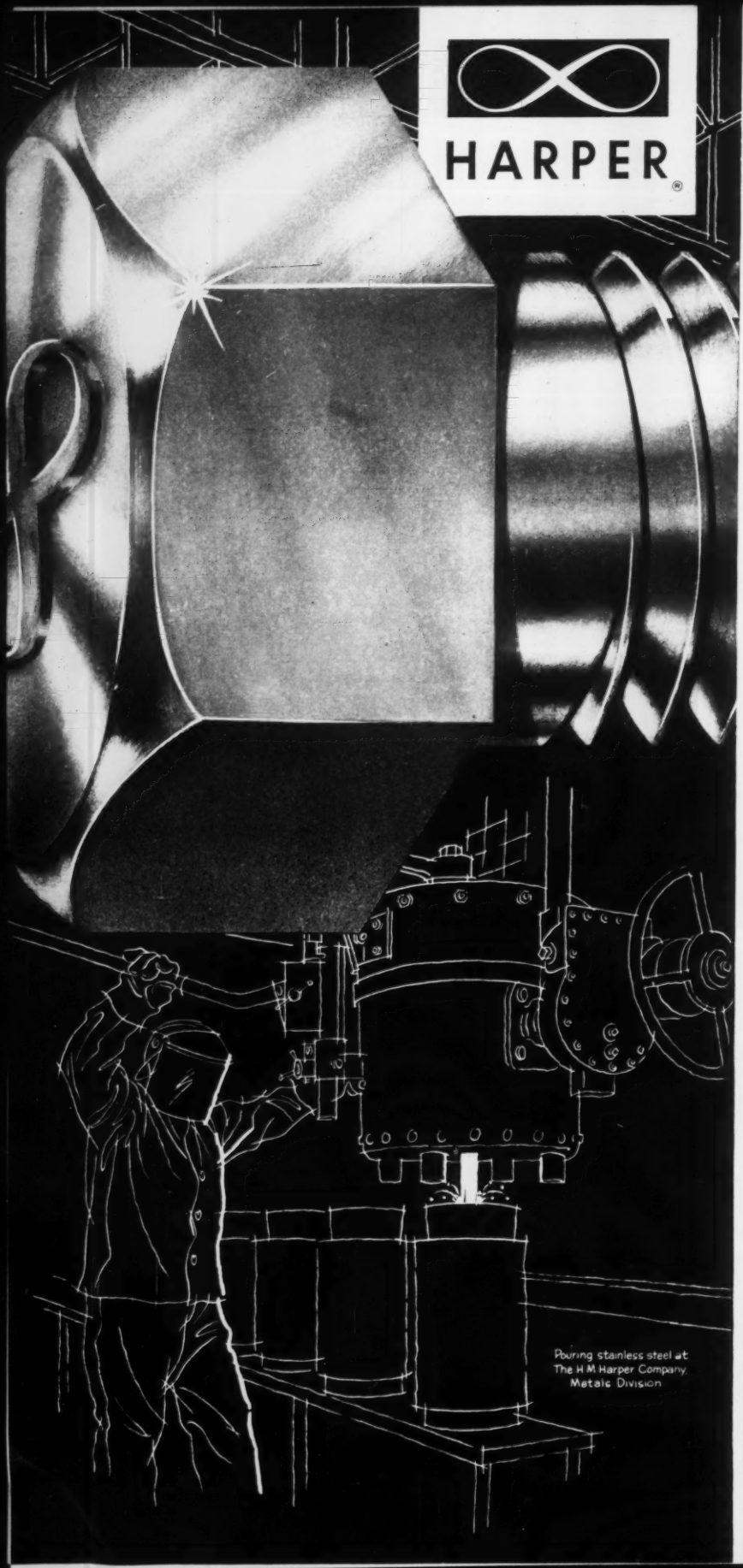
CANADIAN REPRESENTATIVES AT: Calgary • Edmonton • Vancouver • Winnipeg

CF&I STEEL



Steel-strapped Wooden Racks | Shaped Coils (1500-2500 lbs. capacity) | Stem-paks (500-700 lbs. capacity) | Returnable Spiders (2000-3000 lbs. capacity) | Steel-strapped Coils (100-600 lbs. capacity)

6626



chines the inside diameter of the part. Only one spindle at a time is operated on the machine.

The workpiece is clamped in a rotating fixture attached to the spindle. A single point tool, mounted on two hydraulically operated slides, is numerically controlled in two axes (longitudinal and transverse) to machine the desired part shape.

For more information, *write* Industrial Controls Section, Bendix Aviation Corp., 21820 Wyoming Ave., Detroit 37, Mich.

Rectifier Type Welder

THE TESTED features of a rising characteristic power source and the advantages of transformer-rectifier design are combined in the Aircomatic Fillerarc dc welder.

Specifically geared for use with gas shielded, metal arcwelding applications, the machine is suitable for both manual and automatic welding on all weldable metals. Its primary advantage is stepless adjustment of arc length and rate of rise for various wire diameters.

The welder is rated at 450 amperes, 40 volts, 100 per cent of duty cycle.

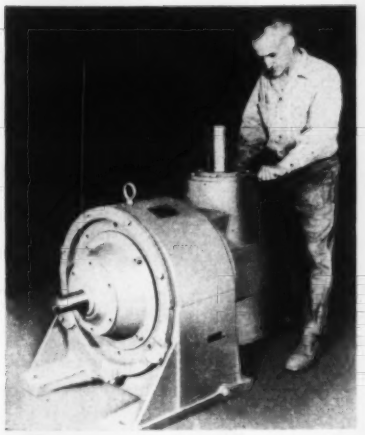
For more information, *write* Air Reduction Sales Co., division of Air Reduction Co. Inc., 150 E. 42nd St., New York 17, N. Y.

Gear Speed Reducers Are Rated to 200 hp

HEAVY DUTY speed reduction is possible with two Philadelphia in-line drives which are rated up to 200 hp. They feature high overall efficiencies of 94 to 97 per cent, depending on the number of reductions required.

Double, triple, and quadruple reductions are available in AGMA ratios up to 440 to 1. Right angle, spiral bevel attachments are available for mounting in any of eight drive positions at 45 degree increments.

Maximum durability and strength are built into each of the units. Final stage helical gearing is carburized and hardened, and gear



teeth are precision ground, giving important advantages in increased load-carrying capacity, reduced vibration and noise, longer life, and space savings.

For more information, *write* Philadelphia Gear Corp., 3620 G St., Philadelphia 34, Pa.

Industrial Turntables

EASE of assembly and disassembly on the job is featured in a line of low cost turntables for industrial transfer applications. A two man crew can install the largest standard unit in less than ½ hour.

Built of reinforced standard structural steel members throughout, the turntables are available in sizes up to 16 ft in diameter, having load carrying capacities up to 3 tons.

For more information, *write* Anchor Steel & Conveyor Co., 6906 Kingsley Ave., Dearborn, Mich.

Washer Cleans Bearings Without Disassembly

ANTIFRICTION bearings up to 5 in. in diameter can be cleaned in the Model MC-4-1 bench-type ball and roller bearing washer.

The unit uses the combined cleaning action of solvent and air,

HARPER®

Corrosion-resistance starts here

What CORROSION-RESISTANT Fastenings Do You Need?

Harper has manufactured fastenings in more than 100 different corrosion-resistant alloys . . . Stainless Steels, Monel, Silicon Bronze, Naval Bronze, Brass, Aluminum, Titanium.

What STANDARD Type and Size Do You Need?

From #2 screw size through diameters of 2 inches, Harper maintains the broadest standard product line in its industry . . . and Harper Distributors are everywhere. See your Yellow Pages.

What SPECIAL Type Fastenings Do You Need?

Cold Heading and Hot Heading techniques are a science at Harper. Both "know-how" and facilities are directed toward cost-reduction and quality improvement on your parts of non-standard size and shape.

What EXTRA Benefits Does Harper Give YOU?

- You have assured supply because Harper produces its own raw metal.
- You receive immediate deliveries from local stocks.
- You gain customer goodwill for your products through Harper quality.
- You lower your costs by efficiencies in purchasing, maintenance and assembly.

Discaloy bolts being removed from 1800° molten salt bath

THE H. M. HARPER COMPANY

8200 LEHIGH AVENUE • MORTON GROVE, ILLINOIS

under pressure. Cleaning is complete, nondestructive, and does not require removal of seals or shields. Average time required for each bearing is 30 seconds to 1 minute.

Bearings up to 14 in. in diameter may be spray washed inside the machine. The washer shield is transparent for visual inspection of cleaning.

For more information, *write* Bearing Inspection Inc., 3311 E. Gage Ave., Huntington Park, Calif.

Unit Checks Thickness Of Nearly Any Coating

FAST, accurate, and direct thickness readings of virtually any coating on any base material can be made with the Dermitron Model D-2 nondestructive coating thickness tester.

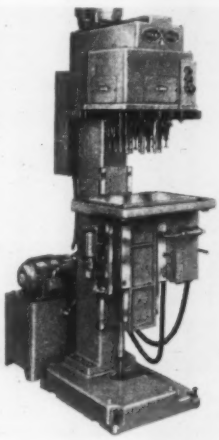
It measures metal coatings (such as plating) on a metal base; nonmetallic coatings (such as paint, anodizing, porcelain) on metal base; and metal films on nonmetallic base (plastics, ceramics).

The instrument comes with four measuring probes for extra wide thickness ranges from thin to thick deposits, and requires only 1/8 in. circle-area for measurement. It can also be used for sorting and matching of metals and alloys. A right-angle probe is optional for measuring coatings and films on the inside diameters of pipes, bores in castings, and similar uses.

For more information, *write* Unit Process Assemblies Inc., 61 E. Fourth St., New York 3, N. Y.

Machine Drills or Taps 12 Holes Simultaneously

SHORT PRODUCTION runs can be made economical with the Deka-Drill, multiple spindle, drilling and tapping machine. Accessibility of controls and ease of setups keep downtime at a minimum.



Two models are available, a manual unit and a hydraulic machine. Both standard models are capable of drilling and tapping as many as 12 holes; more spindles can be ordered.

For more information, *write* Precision Tool & Mfg. Co., 1305 S. Laramie, Cicero, Ill.

Economy Degreasers Do Many Cleaning Tasks

A LINE of low priced (up to $1000) degreasing machines can do a wide variety of metal cleaning jobs in your plant.

The degreasers use a trichlorethylene vapor solution to dissolve greases, oils, and waxes from all

Superior spindle is major factor in accuracy of G&L horizontals

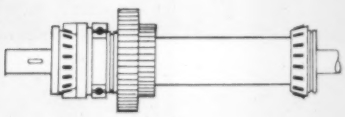
The ability of heavy-duty Giddings & Lewis horizontal boring, drilling, and milling machines to work to jig-boring accuracies on many jobs is made possible by superior spindle construction—and the over-all rigidity and precision of the machines.

Giddings & Lewis spindles ride in ultra-precision Timken 0-33 bearings. These are premium-priced bearings superior to those used in any other horizontal spindle.

Surface finish on Giddings & Lewis spindles averages between two and three microinches. Runout normally measures .0001 to .0002 TIR.

As illustrated in the drawing, the driving gear is shifted close to the front spindle sleeve bearing for slow-speed operation. This minimizes torsional deflection on the spindle. When the heavy drive gear is disengaged for high-speed operation, it provides a flywheel effect, essential for use of carbide tools.

The spindle is accurately supported by the sleeve, ram, and take-



up collet when used in extended position for milling.

When you look at the power and beef that backs up this precision spindle construction, it is not hard to see why G&L horizontals provide exceptional accuracy *and* versatility.

These are some of the reasons why these machines carry the highest trade-in value and the lowest piecework rates of any horizontals available today.

Add to these features use of the building-block principle which gives you more machine for your dollar, and you'll see why G&L is your top buy.

symbol for machining cost reduction

GIDDINGS & LEWIS

GLF-110 T. M.

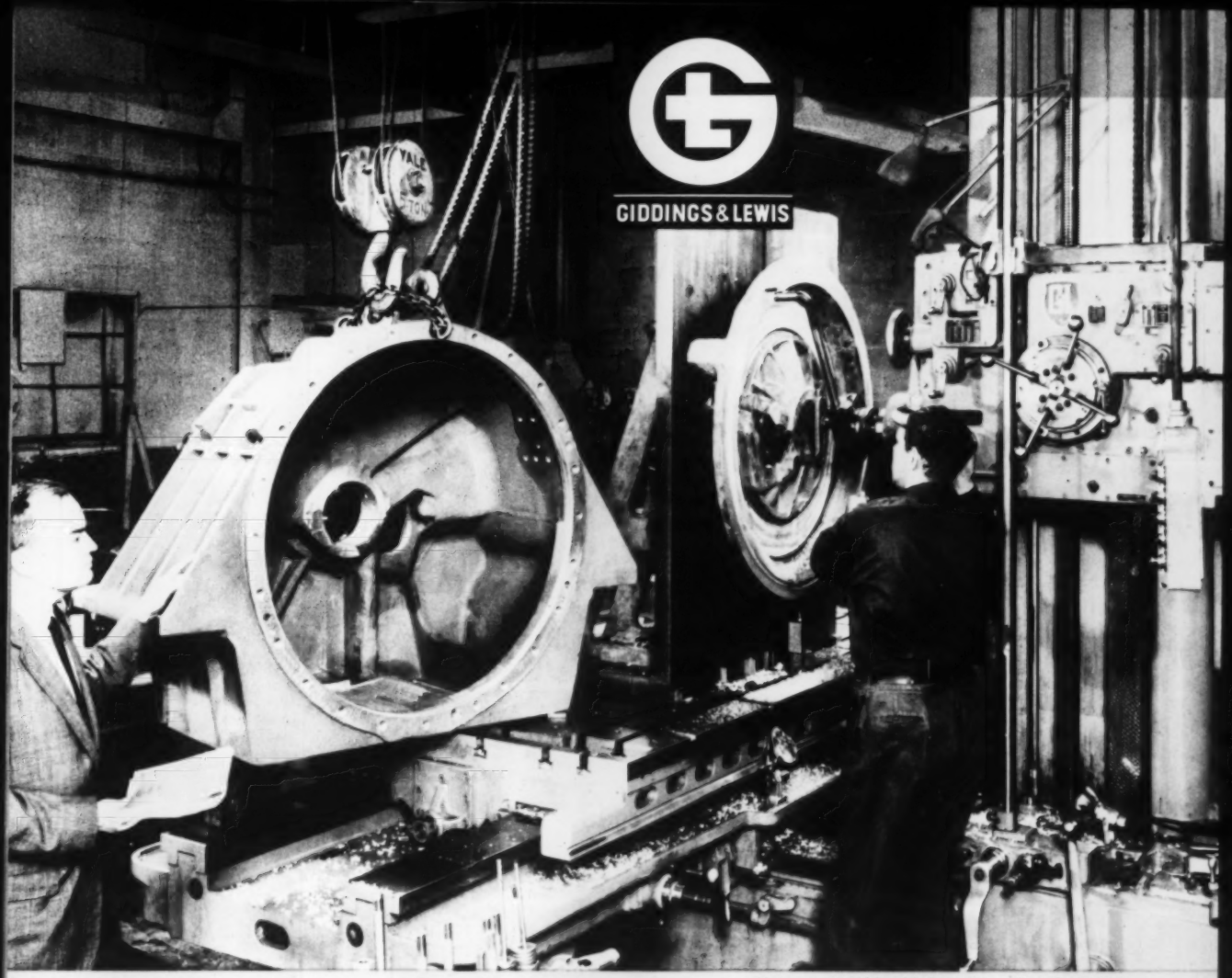


Photo courtesy of Jared Industries, Inc., Hazel Park, Michigan

G&L: for "tenths" accuracy on jobs like this

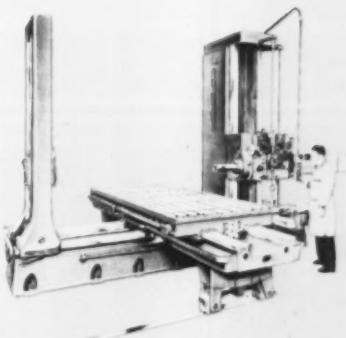
When you are determining the economic justification for a new machine, consider these facts about G&L horizontal boring, drilling, and milling machines:

Accuracy. For example, tolerances of ± .0001″ are being held on dowel spacings in the aluminum transmission housing above. A tolerance of .0005″ is readily maintained on bores.

Machines equipped with the fastest available timesaving automatic electric positioning systems are controlled to predetermined settings within ± .0001″, without final hand adjustments. This is made possible by positioning the table and headstock simultaneously. Addition of the Giddings & Lewis "Lubri-Cool" system, which dissipates heat generated in the machine, assures accurate repeatability all day long.

Versatility. With G&L bar machines, you can handle a tremendously wide range of work. minimize repositioning of workpieces, and frequently handle on the single machine jobs that otherwise would have to be handled on several less versatile machines. They are real metal hogs on heavy die work. They combine the rigidity, power, and ruggedness to take heavy milling cuts on large workpieces. G&L accessories enable them to do turning, boring, backfacing, keyway cutting, and angular milling. Saddle feed can be used for boring operations.

Few machines can give you a comparable return on your investment. For complete information, call your G&L distributor or write.



For accuracy plus *versatility*: G&L table-type horizontals.

GIDDINGS & LEWIS MACHINE TOOL COMPANY

Fond du lac, Wisconsin

Vertical and horizontal boring machines, vertical turret lathes, planers, planer mills, contour milling machines, die sinking machines, drilling machines, numerical and tracer control systems, boring tools and related items, and machine tool accessories.

here comes real detergency

Stuart's new Hi-D

transparent metalworking compound

Stuart

Hybrid compound keeps grinding wheels open and free-cutting, minimizes machine tool maintenance.

Now, today, there is a metalworking compound that offers extra-high detergency for stress-free grinding, yet does not attack paint, remove way lubricant, or leave crystalline deposits on the machine . . . that lubricates as it cleans, yet does not leave an oil film on the chuck . . . that is just as clear as any synthetic compound, yet is a petrochemical-type solution that is effective and stable at 60:1.

Hi-D is one of the outstanding lubrication developments in Stuart's 90-year history. Yet, it costs less per drum than most "coolants"—up to ⅓ less at proper dilution than some high-priced cutting fluids.

No other cutting and grinding compound is anything like it. Best described as a hybrid, it has all the qualities you look for in a synthetic without any of the disadvantages.

Who uses it? Read the results obtained by a large bearing manufacturer on the opposite page.

ferrous and nonferrous metals. Thorough cleaning and drying of parts by vapor condensation and a hand spray rinse is done in seconds.

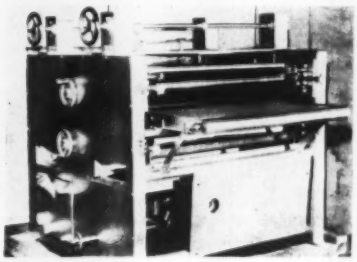
Occupying a minimum of floor space and weighing as little as 400 lb, the Baronet degreasers will efficiently handle a work load capacity of 1600 to 2000 lb an hour, depending on the size of the unit. Interior lengths range from 3 to 8 ft, while inside depth and width of each is 24 by 24 in.

For more information, *write* Baron Industries, 241 W. Avenue 26, Los Angeles 31, Calif.

Unit Roller Coats Metal Twice in a Single Pass

VARYING amounts of varnish, glue, wax, or other coating materials can be applied to the top and bottom surfaces of metal twice in a single pass with the Two-Stage Twin roller coater.

Two double coating assemblies are located on 18 in. centers. Flat stock is fed into the unit by conveyor. A second conveyor moves it from the first coating section to the next. Variable speed drive controls the feed rate. A circulating pumping unit regulates the amount of coating material to the crotches of the upper rolls and the feed pans on the lower rolls.



The front doctor rolls are equipped with micrometer type hand knob adjustments for precision metering. Viscosity is controlled by an immersion heater in the supply tank which keeps material at room temperature at all times.

For more information, *write* Union Tool Corp., Warsaw, Ind.

(Please turn to Page 116)

Stuart's Hi-D cleans, lubricates as it cools, inhibits rust even at 60:1

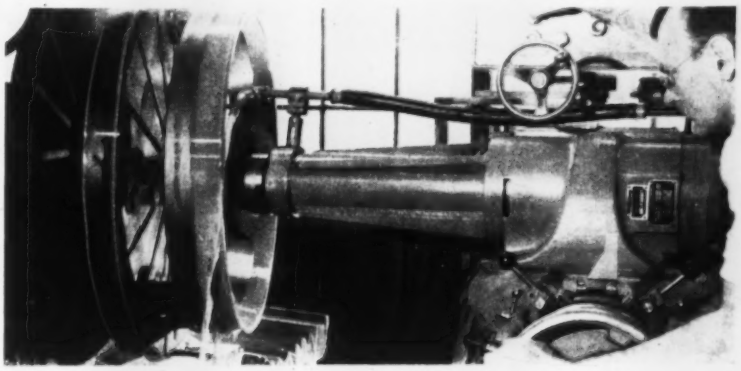
If you do a lot of grinding, you want a highly detergent grinding fluid, don't you? And, if that's what you are using, your greatest opportunity to save lies in the elimination of machine trouble. Here's how Hi-D can help.

This new compound will reduce downtime for machine maintenance because it does not wash lube oil from way surfaces or remove paint. It will reduce downtime for wheel dressing because it keeps wheels free-cutting. And, it will reduce downtime for cleaning the machine because it does not leave crystalline deposits on the chuck or table.

In a flotation-type filtering system, Hi-D has proved its ability to float the "fines" ... and, in an ordinary sump, it has shown excellent chip-settling qualities.

Even for hogging cuts on a surface grinder, Hi-D has all the detergency needed to keep your wheels open, yet does not make them act too soft. You don't have to go into a big wheel program to use it. Mixed at 60:1 for grinding, it slashes lubrication costs, inhibits rust, and remains stable even after picking up tramp oil.

You can standardize more effectively and simplify inventory, too, because Stuart's Hi-D at 40:1 is an excellent cutting compound—has proved its effectiveness on threaders, lathes, and other cutter-type operations. It handles a wider range of operations than most synthetic compounds because it lubricates as it cools.



Proof of performance—*Grinding wheels stayed clean and free-cutting 3 times longer when Stuart's Hi-D was used in this universal gap grinder and other machines at The Torrington Co., Bantam Bearing Division, South Bend, Indiana. This precision bearing manufacturer found it to be the one best fluid for the average condition on 87 grinders. It reduced grinding fluid costs by ⅓ because it is more effective at 60:1 than the former, more expensive lubricant was at 40:1. Phone your Stuart representative for information on our introductory Trial Drum Guarantee.*

Stuart Productive Lubrication

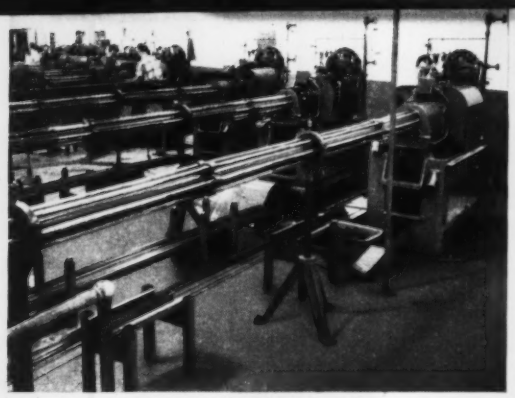
D. A. STUART OIL CO., LIMITED

2727 South Troy Street, Chicago 23, Illinois • Phone: Bishop 7-7100

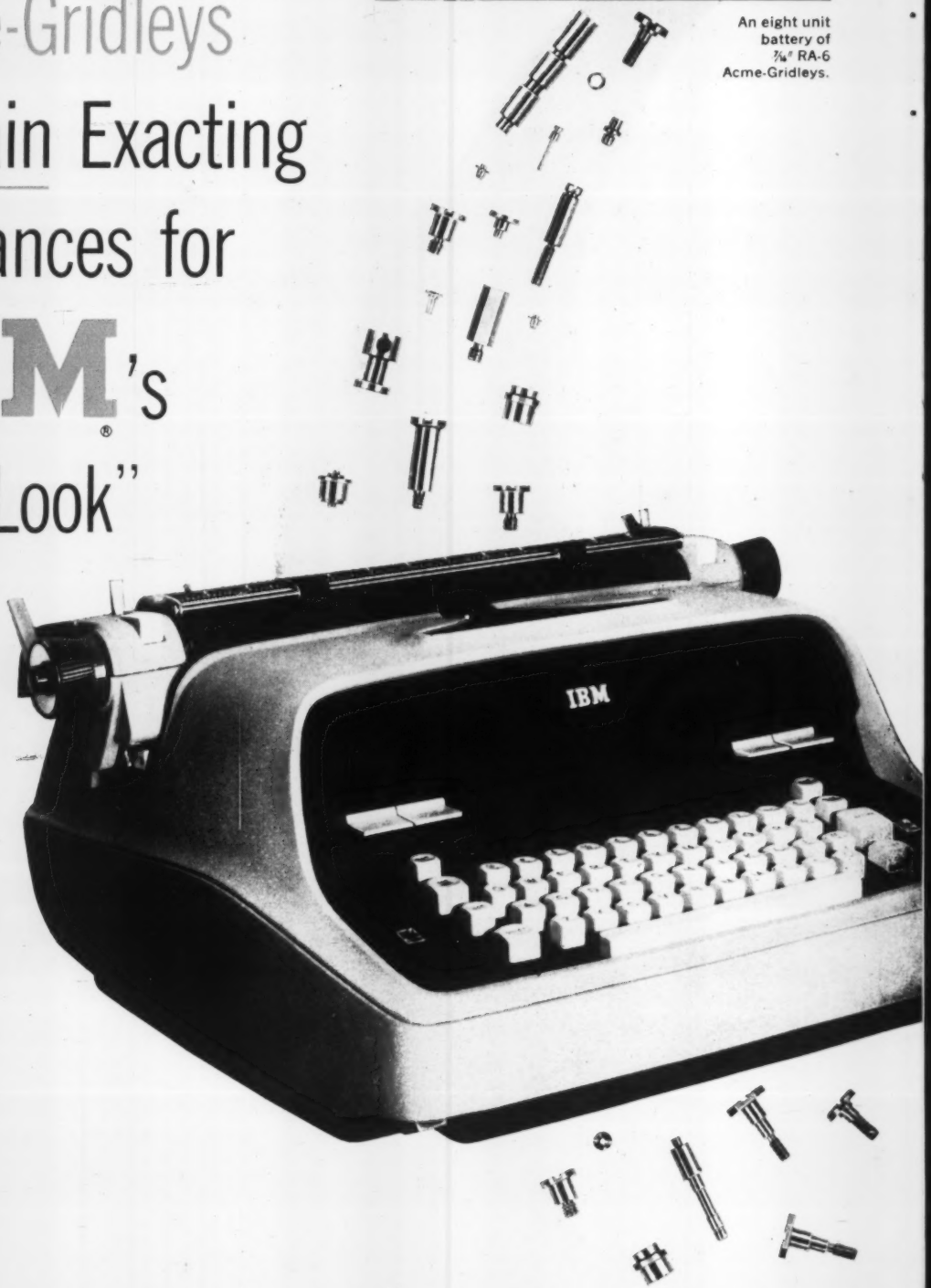
CANADIAN D. A. STUART OIL CO., LIMITED, P. O. Box 430, 43 Upton Road, Scarborough, Ontario, Canada

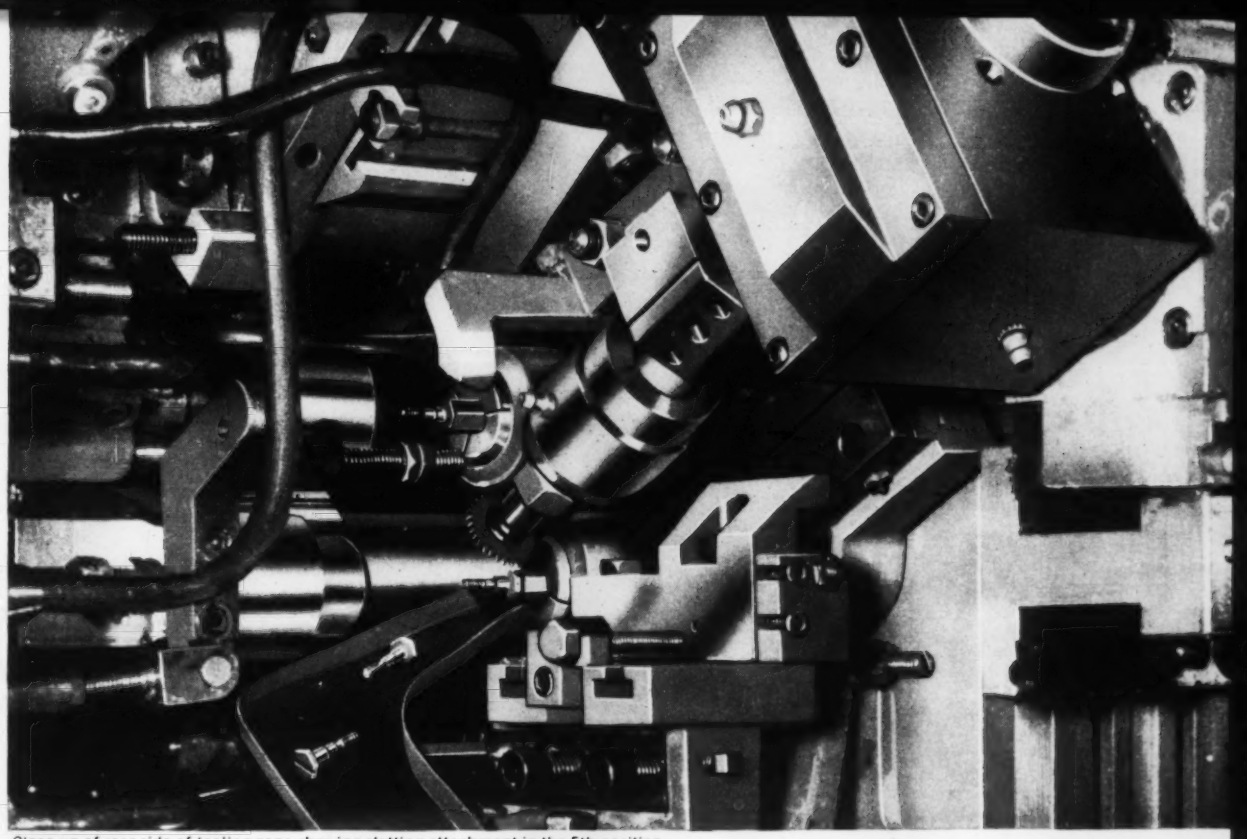
First Precision Component
in the Run . . . or Last

Acme-Gridleys Sustain Exacting Tolerances for IBM®'s "New Look"



An eight unit battery of 7/16" RA-6 Acme-Gridleys.





Close-up of rear side of tooling zone showing slotting attachment in the 5th position.

At IBM's modern Lexington, Kentucky plant, twenty Acme-Gridley 7/16" six spindle automatics are mass-producing the small to miniature parts for their sleek new electric typewriter. They help to provide IBM with greater *sustained* accuracy at lower cost than other comparable machines.

The precision components are held to closely controlled tolerances of .0005 t.i.r. These limits apply to the last piece in the run as well as the first, and consistent accuracy is maintained with less machine adjustment than ever before realized. Sustaining the closely controlled tolerances of these parts completely minimizes costly rejections during exhaustive quality control checks of the completed units. Inspection time is greatly reduced.

IBM has also found that the wide-open tooling zone of their 7/16" Acme-Gridleys permits much greater latitude in tooling up for complicated operations performed in a single set-up. This, plus the lasting accuracy of direct camming and the flexibility of independently operated toolslides, makes this newest member of the Acme-Gridley family a profitable asset to IBM's modern production line. Write for Bulletin MRA-58.

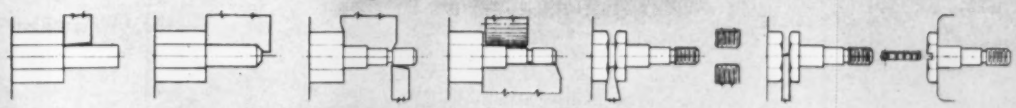
Pioneer in Circumferential Automation

National Acme

The National Acme Company
189 E. 131st Street
Cleveland 8, Ohio

Sales Offices: Newark 2, N.J.; Chicago 6, Ill.; Detroit 27, Mich.

9 Operations in 4.9 Seconds



6. Rough Turn Front End

1. Rough Form and Chamfer Front End

2. Finish Form Two Diameters Finish Turn Thread Diameter

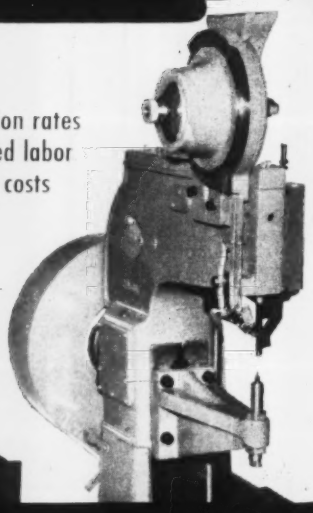
3. Shave Three Diameters

4. Breakdown for Cutoff–Thread

5. Cutoff–Pickup and Slot

Odd shapes are no problem for the new Townsend Model 75 Tubular Rivet Setting Machine

High production rates using unskilled labor cut fastening costs



Skillfully designed tooling gives complete versatility to the new Townsend Model 75 Tubular Rivet Setting Machine. A variety of specialized tooling is available to equip the Townsend machines for any size and shape of work.

Townsend tubular rivets are available in steel, aluminum, copper, brass, nickel-silver and special materials for use in joining anything from cloth to steel sheets. Thus, Townsend makes available the economies of tubular rivet fastening for a wide range of products in a number of different materials. Townsend's experienced fastening engineers provide application design service.

If you wish to enjoy the economies of fastening with tubular rivets, write for complete information on the versatile Model 75 Setting Machine and the complete line of Townsend tubular rivets. Townsend Company, P. O. Box 71-C, Ellwood City, Pa.

Townsend Company

ESTABLISHED 1816

Engineered Fasteners Division

ELLWOOD CITY · PENNSYLVANIA

Cherry Rivet Division · Santa Ana, California

In Canada: *Parmenter & Bulloch Manufacturing Company, Limited, Gananoque, Ontario*

NEW literature

Write directly to the company for a copy

Metal Cleaning Data

"Your Guide to Effective, Economical Metal Cleaning" is a folder containing a series of charts. It covers the task of selecting the correct cleaning method and chemical for the various metals and soils encountered in metalworking and finishing. Magnus Chemical Co., S. South Avenue, Garwood, N. J.

Corrosion-Resistant Fasteners

A 24 page booklet tabulates commonly used metals to show their approximate physical and mechanical properties and their suitability for manufacturing applications. H. M. Harper Co., 8200 Lehigh Ave., Morton Grove, Ill.

Finishes for Aluminum

A 28 page handbook covers five major types of finishing operations, and explains their advantages, disadvantages, and costs. Dept. PRD-9, Reynolds Metals Co., Box 2346, Richmond 18, Va.

Tooling Services Directory

The 1959 Directory of Special Tooling Services lists more than 1000 contract tool and die plants in the U. S. and Canada and the categories of service they offer. National Tool & Die Manufacturers Association, 381 Fifth Ave., New York 17, N. Y.

Keys to Bearing Fits

An 8 page manual contains instructions on preventing premature bearing failures and off-schedule removals; procedures on obtaining accurate bearing fits easily and economically; and engineering data assuring perfect bearing fits on all antifriction bearings. Bearing Inspection Inc., 3311 E. Gage Ave., Huntington Park, Calif.

When to Replace Equipment

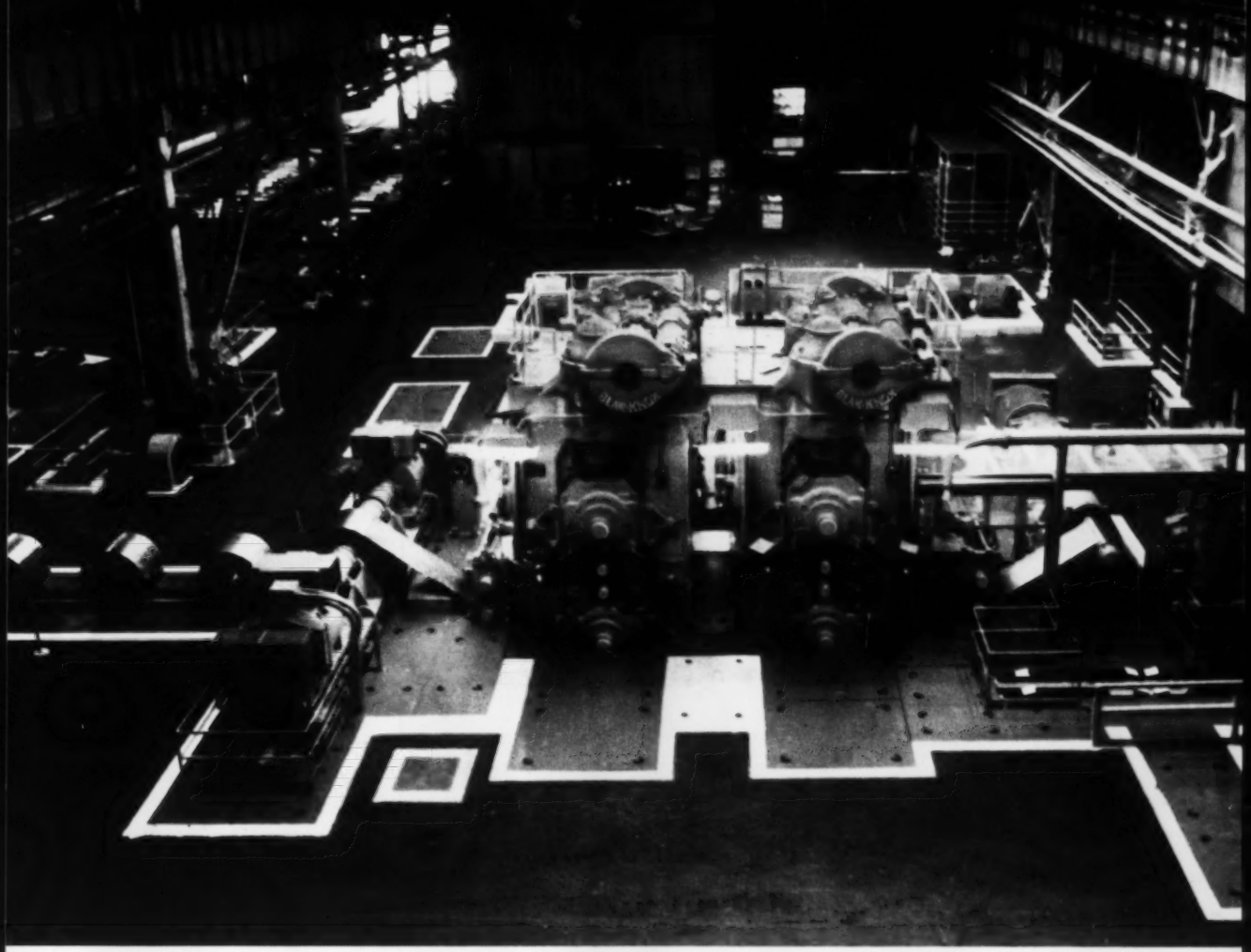
A brochure gives details on how replacement of old machines paid off for six manufacturers, and explains when a replacement works out to the user's best advantage productionwise and investmentwise. Heald Machine Co., 10 New Bond St., Worcester 6, Mass.

Packaging Guide

"Better Ways to Package, Unitize and Ship," 48 pages, contains ideas for improving packaging and shipping methods. It also shows a complete line of strapping, tools, and equipment. Signode Steel Strapping Co., 2600 N. Western Ave., Chicago 47, Ill.

Metal Powder Parts Sealer

A booklet describes Sinter-Seal, a product which makes metal powder parts pressuretight and nonabsorbing. National Sinter-Seal Co., 659 Seneca Industrial Center, Buffalo 10, N. Y.



19- and 53-inch x 48-inch high speed 2-stand Temper Mill at the Fairfield, Alabama, works of the Tennessee Coal and Iron Division of the United States Steel Corporation.

BLAW-KNOX TEMPER MILLS

Blaw-Knox designs and builds a full range of two high and four high Temper Mills for integration into sheet, strip, and tin plate processing operations. Other Blaw-Knox equipment for the metals industry includes complete rolling mill installations and auxiliary equipment for ferrous and non-ferrous metals, sheet and strip processing equipment, electrolytic tinning, annealing, and galvanizing lines, seamless pipe and tube mills, draw benches, and cold draw equipment, Blaw-Knox Medart cold finishing equipment, iron, alloy iron and steel rolls, carbon and alloy steel castings, fabricated steel plate or cast-weld design weldments, steel plant equipment, and heat and corrosion resisting alloy castings.

BLAW-KNOX

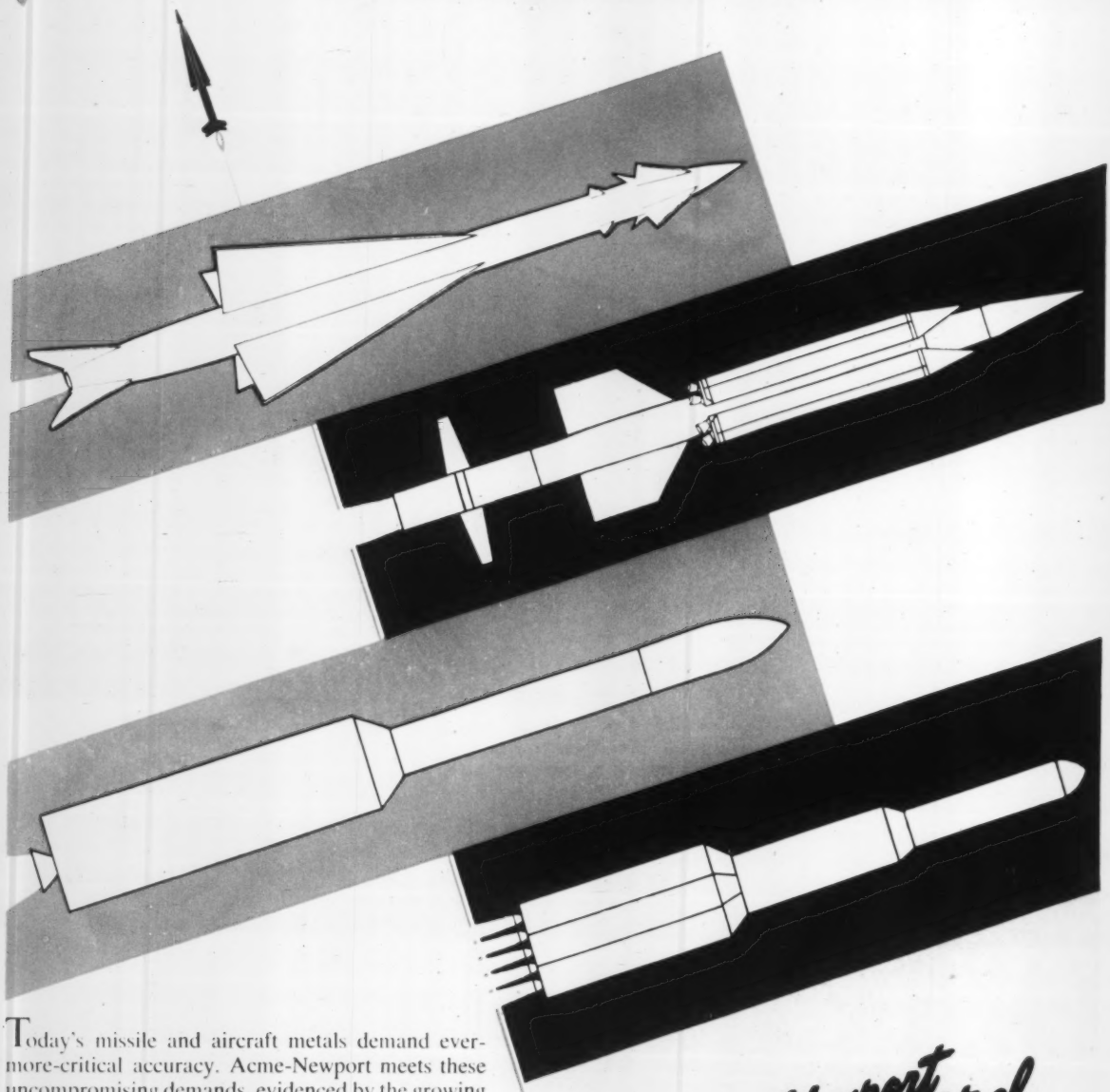
BLAW-KNOX COMPANY

Foundry and Mill Machinery Division
Blaw-Knox Building • 300 Sixth Avenue
Pittsburgh 22, Pennsylvania

MARKET OUTL
OUTLOOK MA
MARKET OUTL
OUTLOOK MA
MARKET OUTL

Acme-Newport

AIRCRAFT QUALITY STEEL
for PERFORMANCE THAT'S OUT OF THIS WORLD



Today's missile and aircraft metals demand ever-more-critical accuracy. Acme-Newport meets these uncompromising demands, evidenced by the growing number of prime and subcontractors who utilize aircraft quality steel from this mill. For various components in missiles, rockets, planes and ground support equipment, Acme-Newport supplies alloy and carbon grades in plate, sheet and strip. All are clean, sound, chemically accurate; all perform exactly as specified.

A basic steel producer with three-quarters of a century experience, Acme-Newport is well-suited to meet *your* steel requirements . . . whether intended for earth or orbit.

Acme-Newport Steel COMPANY

NEWPORT, KENTUCKY

A SUBSIDIARY OF ACME STEEL COMPANY

June 22, 1959

Industry Determined to Hold Price Line

STEELMAKERS will have to give the union something if they expect David J. McDonald to sign a new contract, but they're hoping for a settlement that won't require higher prices.

Although they've stated time and again that wages and benefits can't be increased unless prices are raised, industry negotiators know there's another answer: Getting something in return for high wages. Examples: Increased output, more efficiency, less waste.

About the most they can hope for in terms of higher productivity is an annual increase of 2.3 per cent (the national average over a long period). Applying that to the current hourly wage rate of $3.06 would mean an increase of 7 cents an hour. But industry would argue that labor would be getting the benefits of other input factors (money, materials, and machines).

COMPROMISE LIKELY— Since both sides are on the spot, neither can expect total victory. Mr. McDonald feels he has to produce something if he's to disarm the USW rebels. Industry negotiators have to stand fast because they're battling inflation and the inroads of foreign steel. Possible solution: Concessions by the USW on operating procedures in exchange for a wage increase.

PRICES MAY HOLD— Although Mr. McDonald has rejected the industry's eight-point program aimed at improving efficiency, he may agree to some contract changes that would enable steelmakers to raise wages without increasing their over-all employment costs. Elimination of some featherbedding practices, for example, could result in savings to the mills sufficient to offset a small wage increase.

MILLS PREPARE FOR STRIKE—Because union and management negotiators are farther apart than ever after six weeks at the bargaining table, steelmakers are getting set for a walkout. They've already taken the initial step of cleaning out raw material pipelines. Within a few days, they'll start banking furnaces.

INVENTORIES IN GOOD SHAPE—In general, consumers seem to be satisfied with their inventories. Automakers are in a particularly strong position because they've taken in enough steel to wind up production of the 1959 models and get started on next year's. They're under no pressure from dealers because new car inventories are at an all-time high (more than 909,000).

SCRAP PRICES CLIMB— Even though steelmakers have shut off scrap deliveries for June (they don't want to take in anything they can't use before the strike deadline), prices are rising. STEEL's composite on the No. 1 heavy melting grade advanced $1 last week to $36.50 a ton. In the East, export demand is bolstering the market. Elsewhere, dealers are bullish because:

1. If there's no strike, they assume that steelmaking will continue at a fairly high level in July and that mills will need more scrap.
2. If there is a strike, they believe that steelmakers will reline many of their blast furnaces before resuming production. With hot metal output curtailed, they'll have to use more scrap.

PRODUCTION TAPERS OFF—Last week, steelmakers operated their furnaces at 92.5 per cent of capacity. Production was about 2,619,000 net tons of steel for ingots and castings.

WHERE TO FIND MARKETS & PRICES

	News	Prices
Bars, Merchant	125	131
Reinforcing	...	132
Boiler Tubes	...	134
Canada	...	*
Clad Steel	...	135
Coke	...	137
Coal Chemicals	...	137
Charts:		
Finished Steel	...	129
Ingot Rate	128	...
Scrap Prices	...	141
Comparisons	...	129
Contracts Placed	148	...
Contracts Pend.	148	...
Electrodes	...	137
Fasteners	...	134
Ferroalloys	...	138
Fluorspar	...	137
Footnotes	...	134
Imported Steel	124	137
Ingot Rates	128	...
Metal Powder	...	137
Nonferrous Met.	144	146
Ores	...	137
Pig Iron	147	136
Piling	...	131
Plates	124	131
Plating Material	...	147
Prestressed Strand	...	*
Price Indexes	...	129
Producers' Key	132	...
R.R. Materials	147	134
Refractories	...	137
Scrap	140	142
Semifinished	128	131
Service Centers	127	136
Sheets	123	132
Silicon Steel	...	133
Stainless Steel	127	135
Strip	123	133
Structurals	147	131
Tin Mill Prod.	...	133
Tool Steel	123	135
Tubular Goods	125	135
Wire	124	133

*Current prices were published in the June 15 issue and will appear in subsequent issues.

Metalworking Outlook—Page 29 Technical Outlook—Page 85

This is a picture of a new product

It's nothing you can use in your plant tomorrow — or even next year. But Allis-Chalmers is working on it *now* to meet the needs of industry in the future.

Fundamental research of materials, processes and equipment is an important part of the A-C contribution to industry. *This enables product design engineers to make existing products even better, to create a continuous flow of new equipment, to help industry achieve new efficiencies and economies.*

Research and development are only two reasons why A-C is recognized as a leader in supplying both electrical and mechanical equipment for industry. Single-source availability of "teamed" equipment, maximum engineering help and outstanding service facilities are others.

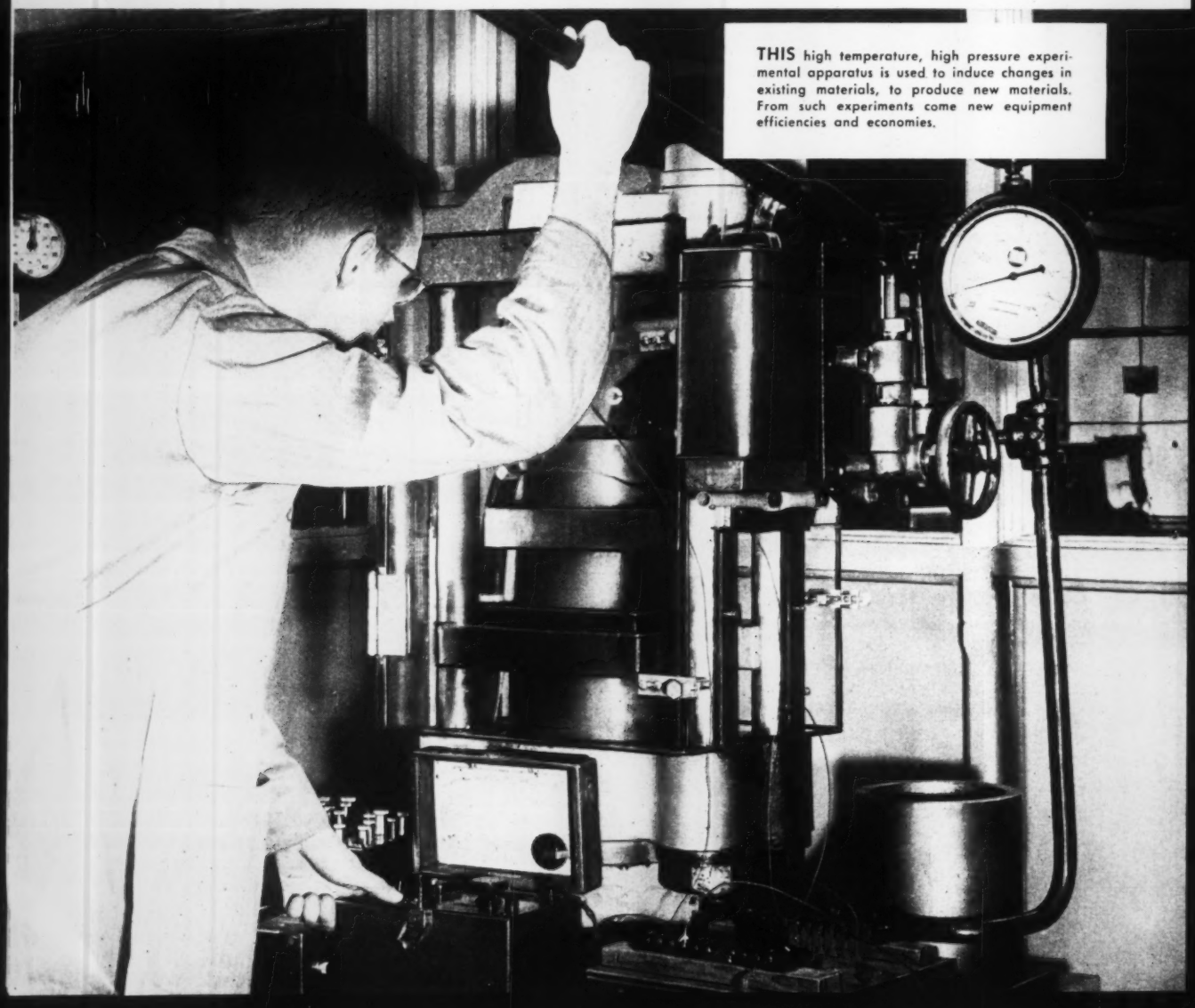
Talk *to your A-C representative or distributor soon about your requirements. Or write Allis-Chalmers, Milwaukee 1, Wisconsin.*

Plan to stay ahead... MODERNIZE!

Products for industry: Electrical Generation, Distribution and Utilization Equipment; Pumps; Compressors; Mechanical Power Transmission Equipment; Processing Machinery; Motors and Control; Water Conditioning Systems, plus Materials Handling Equipment.

A-C ALLIS-CHALMERS

A-1004-G1



THIS high temperature, high pressure experimental apparatus is used to induce changes in existing materials, to produce new materials. From such experiments come new equipment efficiencies and economies.

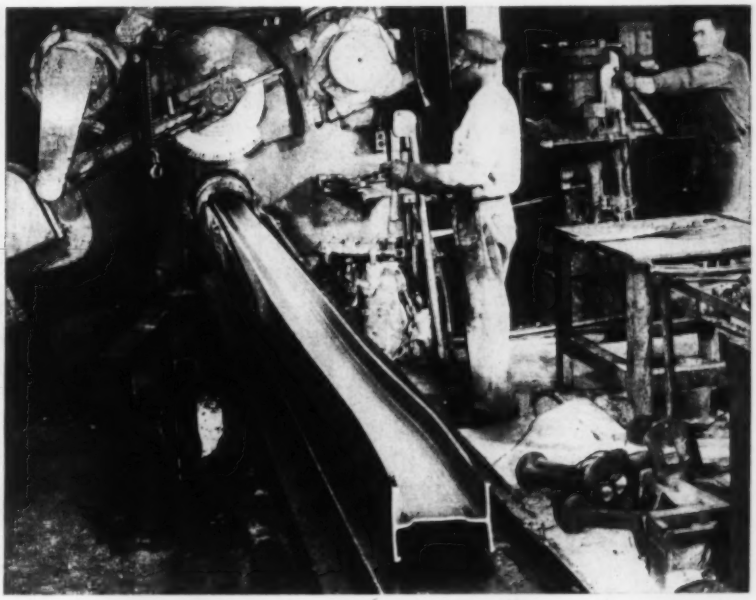
Extrusion Sales Up; Uses Increase

Shipments Way Up in '59

(In tons)

	Aluminum[1]	Magnesium[2]
1959	464,000[3]	5950[4]
1958	371,561	4955
1957	353,365	5750
1956	351,819	7077
1955	341,190	6255
1954	224,816	4537

Sources: [1]Bureau of the Census.
[2]Bureau of Mines.
[3]Estimated by STEEL.
[4]Estimated by Dow Chemical Co.



An I-beam mullion being extruded by Chase Brass & Copper Co.

A MAJOR motor manufacturer was commissioned to build a unit with an aluminum stator for a highly specialized application. Design engineers huddled and decided to substitute an extrusion for the original specifications. Reasons: Extrusions would overcome a porosity problem, save weight since the stator wall thickness could be reduced, and require less machining.

Extrusion is one of the fastest growing major fabricating techniques. Enthusiasts cite other advantages: The intricate shapes and close tolerances possible, reduction in finishing operations, and frequently lower end costs (although initial charges are usually higher).

• **Aluminum**—The light metal continues to lead the pack in volume and new applications. Producers say extrusions are the fastest growing mill product in the aluminum stable. Industry shipments are expected to shoot up 25 per cent this year (see table).

The biggest use will continue to be in the architectural field. Several skyscrapers now going up, like the Time Inc. building in New York, take large tonnages of extruded aluminum for vertical mullions, window frames, and other functional-decorative uses. Building and store fronts, railings, and elevators are employing more and more extrusions. In the home, you'll notice more extruded aluminum for storm windows and screens, window frames, doors, and trim.

The auto market is a large user, principally for trim. Car designers say extrusions are also gaining popularity in functional applications. Aircraft take large amounts for structural and trim uses. Extruded tubing sales to furniture makers is an important market. The electrical field is expanding due to the burst in popularity of aluminum conduit and the potential of extruded structurals for substations and transmission towers.

Large aluminum shapes are being used for transportation equipment, building, and architectural sections, structural members for aircraft and missiles, bus bars for electrical distribution systems, and bridge structurals.

Even with the heavy sales increase this year, cutthroat pricing is still a problem. Reason: Too much capacity makes the industry fiercely competitive. Official counts list about 100 firms scratching for business, but industry sources believe small operators may boost the figure another 50 to 75.

• **Magnesium**—Buyers are stepping up purchases for use in aircraft and missiles, luggage, material handling equipment, ladders, welding rods, water heaters, electronic parts, and military vehicles.

Recently developed precision extrusions offer tolerances otherwise obtainable only by machining and a series requiring no stress relief after welding.

Prices of commercial grade extrusions have been reduced an average of 12 per cent in the last year.

• **Copper**—Extrusions made from this metal and its alloys account for under 5 per cent of all copper mill products sold. Yet, percentagewise, mills say this is one of their fastest

growing markets. Sales are rising 15 to 20 per cent over last year's (some gains run up to 45 per cent).

Major uses: 1. Architectural (exterior building panels, window and door frames and channels, stairway and balcony railings, entrances, store showcases, and decorative shapes). Makers believe there's a trend back to architectural bronze in many applications, mainly at the expense of aluminum and stainless steel. The John Hancock Mutual Life Insurance Co. building going up in San Francisco is taking 150,000 lb of bronze extrusions, reports Chase Brass & Copper Co. 2. Building hardware such as lock bodies and sliding door panels. 3. Electrical components like generator windings, bus bar conductors, switch gear assemblies. (One of the best potentials: Complicated electronic parts requiring metals with good electrical conductivity.) 4. Automotive fittings.

Miscellaneous applications run the gamut from lamp shades and watch cases to piano parts and handbag trim. Phelps Dodge Corp. made 400 tons of copper extrusions for the electromagnets in the giant Brookhaven atom smasher.

• **Nickel**—Demand for nickel base alloy extrusions has gained over the last several years. Most shapes are shipped in tubular form for corrosion and heat resistant applications in the chemical, petroleum, and aviation fields.

• **Titanium**—Extrusions haven't become a major product here. But uses are growing. The four producers ship the bulk of their shapes to the aircraft industry for use in jet engines, hydraulic lines, and airframes (ribs, stiffeners). Example: North American's A3J Navy attack aircraft uses 58 extruded titanium shapes in about 100 different parts. Designers of the B-70 (Mach 3 bomber) reportedly are interested in titanium extrusions for airframe components.

Civilian uses are growing, particularly in chemical process equipment like heat exchangers, tubing, piping, and fittings. One utility company is testing condenser tubing in areas with corrosion problems.

• **Lead**—Nearly 1 million tons of lead were consumed in this country last year. About 10 per cent was extruded.

All lead sheathing for power and telephone cables is extruded. This market sunk from 134,000 tons in 1956 to 75,000 tons last year. A continuous extrusion process is being investigated as a means of recapturing part of this market.

All lead pipe and tubing are extruded. Major uses: Piping in chemical plants, plumbing, and water service pipe.

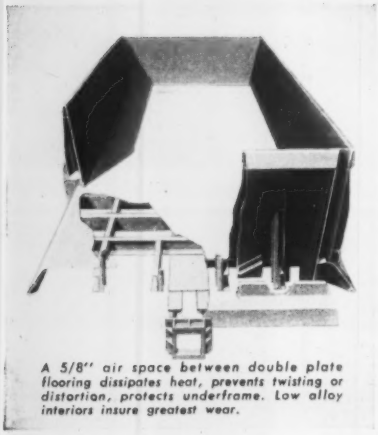
All wire solder is extruded. Principal users: Electrical industry, home owners. Lead cores for rifle ammunition are generally extruded.

• **Zinc**—Many people think zinc extrusions may be on the comeback. Hot extrusions, which went out after World War II, are starting to appear again in such areas as door saddles.

Market planners mention possibilities in terrazzo strip for the building industry, grilles for autos. Say zinc people: If zinc competes with screw machine products, extruding would offer the best fabrication method because of its ready adaptability to finishing.

MAGOR AIR DUMP CARS

FOR STEEL PLANT SERVICE

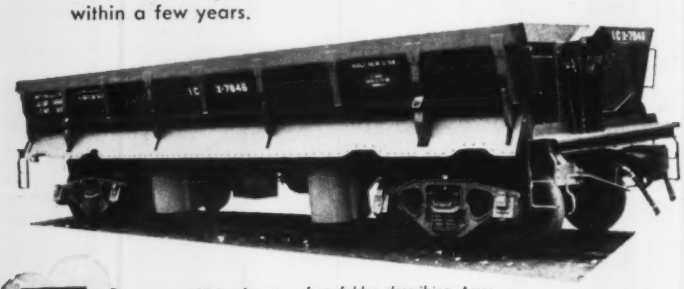


A 5/8" air space between double plate flooring dissipates heat, prevents twisting or distortion, protects underframe. Low alloy interiors insure greatest wear.

The new Magor Air Dump Car for steel plant service can cut your refuse disposal costs as much as 40%! Safe, swift, automatic dumping eliminates expensive labor and crane equipment. Low height and open type body means faster loading. Saves time, labor and haulage costs! Smooth interiors eliminate "dead load" returns!

The double-plate flooring shown here is just one of the many Magor design features that account for Magor's leadership in dump car production. Designed for the job — built to last, Magor Air Dump Cars cost less to buy — less to operate!

Savings effected by the new Magor Air Dump Cars will write off your entire dump car investment within a few years.



MAGOR

Write for your free folder describing America's number 1 air dump car, today!

MAGOR CAR CORPORATION

50 Church Street
New York 7, N.Y.

Tool Steel . . .

Tool Steel Prices, Page 135

Tool steel producers are operating near capacity, with the best volume of business they've had in about three years. Barring adverse developments, shipments in June should equal or exceed last month's.

Inventory building is partly responsible for the boom, but there's less stockpiling of tool steel than of other steel products. Reason: Many smaller producers won't be shut down by a July 1 strike of steelworkers.

Makers of tool steels are encouraged by prospects of continued strong demand. Many customers who bought for inventory two or three months ago are coming back into the market. They have used much of the material originally ordered for stock.

Even if a strike is avoided, next month's business will be slow since many consumers will close their plants for vacations.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 132 & 133

CONSUMERS are pressing for all the sheet tonnage they can get in before the steel strike deadline June 30. Most of them have already placed substantial orders for third quarter. If there's no steel strike, there may be cutbacks and some cancellations, but it's doubtful there will be much wiping out of tonnage. The over-all outlook for late summer and early fall consumption is regarded as good.

In general, sheetmakers are two to three weeks behind schedule on delivery of cold-rolled sheets. At best, they're five days late; at worst, they're three weeks off the pace. Delays are due to slowdowns and shortages of trucks. It's thought labor and transportation problems may become more acute before this month is out.

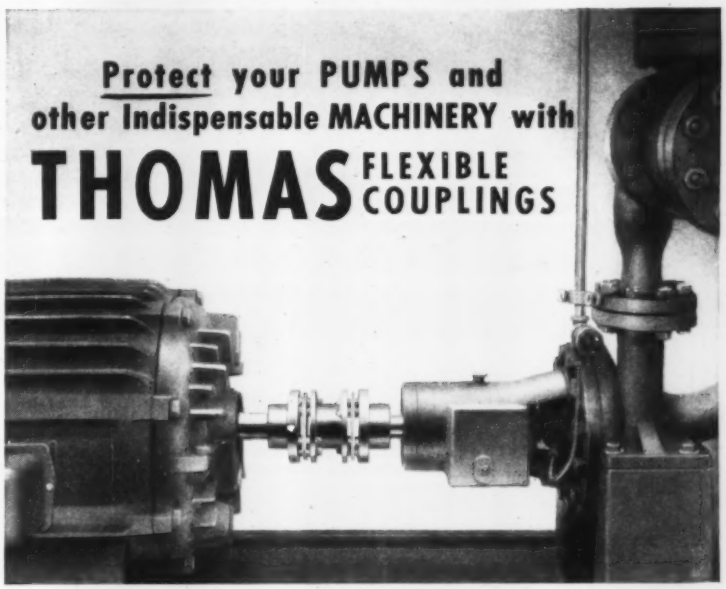
• **High-Level Production**—Barring a strike, July output should be close to capacity. The carryover from June will be sizable, and by the time the labor situation is clarified it may be too late to cancel July tonnage. Some mills are sold out for August, but part of the tonnage for that month will undoubtedly be canceled or held up if there's no strike. One Pittsburgh mill estimates it may lose 15 per cent of its August book. Another thinks cancellations will be few because consumption is rising, and many users haven't been able to increase their inventories.

Automakers are ordering slowly for August and September, evidently because they took in so much steel during the first half to protect themselves against a strike. Now it's believed they're concerned about the size of dealers' new car inventories (estimated at more than 900,000). "They're not taking a full buy for August," a sales executive comments, "but that's all right with us. We'll be able to take care of the smaller fellows whose inventories aren't big enough to sustain production.

• **Coated Sheets Tight**—Galvanized remain the tightest of the flat-rolled products. Producers will operate at capacity throughout the third quarter and may do as well in the fourth. Automotive applications are increasing, and there's been no letup in demand from building contractors and service centers.

Some consumers of zinc-coated sheets will not get delivery on substantial tonnage ordered for shipment by June 30. More mills have

Protect your PUMPS and other Indispensable MACHINERY with THOMAS FLEXIBLE COUPLINGS



NO LUBRICATION NO MAINTENANCE NO WEARING PARTS

Future maintenance costs and shutdowns are eliminated when you install Thomas Flexible Couplings. These all-metal couplings are open for inspection while running.
They will protect your equipment and extend the life of your machines.
Properly installed and operated within rated conditions, Thomas Flexible Couplings should last a lifetime.

UNDER LOAD and MISALIGNMENT ONLY THOMAS FLEXIBLE COUPLINGS OFFER ALL THESE ADVANTAGES:

- Freedom from Backlash
- Torsional Rigidity
- Free End Float
- Smooth Continuous Drive with Constant Rotational Velocity
- Visual Inspection While in Operation
- Original Balance for Life
- No Lubrication
- No Wearing Parts
- No Maintenance

Write for Engineering Catalog 51A

THOMAS FLEXIBLE COUPLING COMPANY
WARREN, PENNSYLVANIA, U.S.A.

lost ground on scheduled promises this month, and some are nearly four weeks behind.

Other grades of flat-rolled lag behind shipment schedules, but this situation is most serious in zinc-coated specialties.

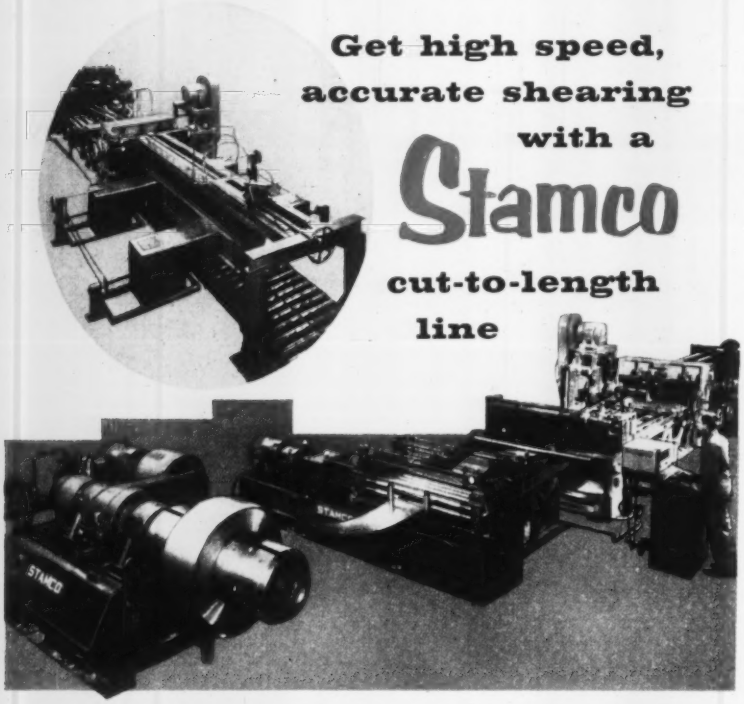
Wire . . .

Wire Prices, Pages 133 & 134

Although users of manufacturers' wire and cold heading grades are striving for an inventory that will carry them six weeks to two months, some may not be able to hit that target by June 30 because of heavier consumption than they had previously anticipated.

Carryover by mills likely to be closed down by a strike will not be heavy. In any event, wire production will not be completely halted since a substantial portion of capacity will not be affected.

Imports are estimated to be cutting into domestic volume to the extent of 10 per cent a month. This proportion is likely to increase should there be a strike.



UTILITY APPLIANCE COMPANY installation in Los Angeles features a 16 gauge x 48 inch wide cut-to-length line—with automatic sheet piler and a 21 roll leveler to produce top quality flat sheets for larger panels. Let Stamco supply the economical answer to your shearing problems with long life machines.

Stamco, Inc., New Bremen, Ohio, U.S.A.

Slitting and Coiling Lines • Cut-To-Length Lines • Flying Shear Lines • Power Squaring Shears • Automatic Resquaring • Corrugating • Culvert • Steel Mill Equipment

Imported Steel Advancing In Southwest Market

Except for nails, prices on foreign steel continue to rise in the southwestern market. Two foreign mill depots at Houston raised their prices $5 and $7 a ton within a week. Since February, prices on imported angles have been advanced $17.20 a ton.

All foreign mills represented in the Houston area are on strict allocation, except for wide flange sections. Foreign plates and bars are in tighter supply. As a general thing, deliveries average from four to six months.

Buffalo Steel Corp., Tonawanda, N. Y., is importing used steel rail for rerolling into other steel products. It has placed orders for 20,000 tons of used rails, the material to come from England, Ireland, and France.

Prices on imported steel delivered to Great Lakes ports are tightening noticeably. Previously brokers paid transportation to buyers' plants from docks. Now the price sheets simply say "delivered at docks." It means that foreign sellers are no longer paying delivery charges from dock to consuming plant.

Here are some prices on imported products quoted at Detroit: Hot-rolled plates, 48 by 120 in., in 250 ton lots, $6.40; hot-rolled sheets, 10,000 lb coils, 36 in. wide, 7 to 16 gage, $6.30 to $6.85, depending on gage.

Plates . . .

Plate Prices, Page 131

If there's a steel strike come July 1, platemakers will probably average two to three weeks arrearages. But if a strike is averted, the mills should become current on their commitments fairly early.

In general, market prospects are promising, but adverse seasonal influences must be taken into account. Also, should there be no strike, there may be some order cutbacks and cancellations.

An encouraging aspect is a quickening of interest by the oil, gas, and chemical industries. Demand from these areas of consumption has been lagging. Also, there is some improvement in specifications for large industrial and marine boiler instal-

QUANTITY PRODUCTION OF GREY IRON CASTINGS

ONE OF THE NATION'S LARGEST AND MOST MODERN PRODUCTION FOUNDRIES

ESTABLISHED 1866
THE WHELAND COMPANY
CHATTANOOGA 2, TENN.

WARD STEEL CO.

We specialize in
FINISHED STEEL
BARS—TUBES—STRIP

PROMPT WAREHOUSE SERVICE ONLY

Most Complete Stock in America of
BLUE TEMPERED SPRING STEEL

We believe that the way to sell is to carry a stock which permits satisfying any reasonable warehouse demand.

87A Rindge Ave. Ext. Phone UN 4-2460
CAMBRIDGE 40, MASS.

Branch:
3042-3058 W. 51st Street, CHICAGO, ILL.
Phone: Grovehill 6-2600

lations. But demand for the so-called "package" lines, such as boilers for office buildings and dry cleaning establishments, is still spotty. Shipwork is also on the slow side.

Steel Bars . . .

Bar Prices, Page 131

Some merchant bar sellers can still enter tonnage on their books for shipment in July (assuming no steel strike). This applies to hot, alloy, and cold drawn bars. Tonnage isn't available in all sizes, and there are some exceptions where the material requires special treatment.

The situation indicates that demand for the third quarter is only moderate, with buyers inclined to "wait and see" what happens as the result of the steel labor negotiations. The position is also borne out by the spotty bookings for August shipment. But buyers continue to press the mills for all the tonnage promised them for delivery this month.

New England users' inventories will average 45 to 60 days by the end of June. In some cases, stocks will be heavier. A few district consumers are placing third quarter orders with a view to obtaining priority in rolling schedules when work is resumed after the expected strike. If there is no walkout, many will not need the bars they've ordered until September or October.

Tubular Goods . . .

Tubular Goods Prices, Page 135

Oil country goods producers are a week or two behind on deliveries, mainly because of inevitable breakdowns after weeks of capacity operation.

June shipments of tubing are on a par with last month's. Drill pipe entries in order books have picked up noticeably. Some producers are turning out about as much tonnage as they can make.

Downriver stocks of most products at mill depots have been nearly cleaned out, but the oil companies have built big inventories.

Standard pipe shipments are running well ahead of those last month. One producer closed his first half order book on seamless pipe at the end of May, and shut off buttweld entries ten days ago. Consump-

MUNDT PERFORATED METAL MEANS PERFECT SCREENS

Specially Fabricated for ALL INDUSTRIES BY
CHARLES MUNDT & SONS
53 FAIRMOUNT AVE.
JERSEY CITY 4, N. J.
PHONE—DELAWARE 3-6200
Send for Illustrated Catalog

HOW TO MAKE YOUR $'S DEGREASE MORE PARTS

You make no profit on the time you spend cleaning out a degreaser.

You cut another slice off the top of profits whenever you have to add fresh stabilizer to your trichlorethylene bath.

When a bath goes "sour" while you're processing, you lose still more time and money.

psp is the simple answer

Trichlor is trichlor the world over: it's the *stabilizer* in your trichlor that can make the difference.

The difference in Nialk® stabilizer is *psp*—permanent staying power.

Nialk stabilizer is neutral. It cannot react with acids to form corrosive salts. Still it "accepts" acids and renders them completely harmless. The Nialk stabilizer will not stain or discolor your parts or allow your bath to become "sour."

You never add fresh stabilizer to a Nialk bath. The stabilizer stays potent no matter how long you use it. It's insoluble in water so you don't lose it during steam distillation or in the water separator of your degreaser.

Nialk frees your bath of those degradation products which settle on coils and cut down heat transfer. Cleanouts are widely spaced and quickly finished.

If your profit picture could use a little brightening, you'll want to know more about the whole subject of trichlor stabilizers. Send for our Bulletin 70 for the complete story.

HOOKER CHEMICAL CORPORATION

1206 Union Street, Niagara Falls, N. Y.

HOOKER CHEMICALS PLASTICS

NIALK® CHEMICALS
OLDBURY® CHEMICALS
SHEA® CHEMICALS
DUREZ® PLASTICS

Sales Offices: Chicago, Ill.; Detroit, Mich.; Los Angeles, Calif.; New York, N. Y.; Niagara Falls, N. Y.; Philadelphia, Pa.; Tacoma, Wash.; Worcester, Mass. *In Canada:* Hooker Chemicals Limited, North Vancouver, B. C.

tion has increased so rapidly that users haven't been able to accumulate large stocks.

Spurred by the Supreme Court's reversal of the Memphis decision on natural gas transmission rates, demand for trunk line pipe remains strong. If there's no steel strike, producers will operate at capacity throughout the third quarter.

Stainless Steel . . .

Stainless Steel Prices, Page 135

Stainless steel producers are running about 75 per cent of capacity on sheets and plates. Deliveries are close to schedule. Inventory building isn't heavy because roughly 65 per cent of the tonnage moves through service centers.

Prices are firm. The most recent price action was by Republic Steel Corp. (In April it reduced quotations on stainless rerolling billets and slabs.) Its new schedule (STEEL, Apr. 27, p. 135) showed reductions ranging from 2.75 cents per pound on the 410 grade to 4.25 cents on types 310 and 317.

Distributors . . .

Prices, Page 136

Steel service centers are winding up what will be their best month so far this year. They have booked substantial tonnages in all major lines. Should the mills be struck July 1, they probably will be confronted with heavier demand.

Some consumers are beginning to get concerned about their inventories. They are picking up tonnages from various sources to bolster their reserves.

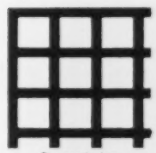
Most distributors have had inquiries for mill size tonnages, but they are being turned down. The attitude is that their own inventories must be reserved for service to regular customers and not raided for the benefit of big buyers. Actually some doubt if many users would pay premium prices for additional supplies at this time.

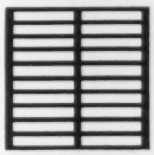
Items in biggest demand are galvanized sheets, hot and cold rolled sheets, structurals, and bars. Some holes are beginning to develop in distributors' stocks, and few of them can be plugged prior to July 1. Distributors and consumers are in the same boat insofar as getting mill shipments.

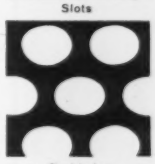
Chicago steel service centers have

H&K PERFORATED MATERIALS

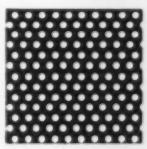
for Industrial or Decorative Uses

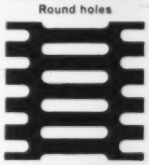

Square holes

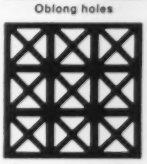

Slots


Oval holes

THOUSANDS OF DIFFERENT PATTERNS AVAILABLE


Round holes


Oblong holes


Decorative patterns

H & K facilities enable the perforating of all metals, wood, plastics and cloth fabrics. Perforated materials can be furnished in sheets, coils, rolls or plates. Fabricating services include shearing, rolling, welding and forming.

Perforated metal can be ordered with special finishes: aluminum—color anodized or brushed and lacquer finish; steel—painted, chrome plated, enameled, japanned or other baked-on finish. Decorative patterns can be embossed if requested.

Many patterns in steel sheets (industrial or decorative) are in stock at our warehouses. Send for H & K Stock List Brochure.

Listed Under "Perforated Metals"

Write to nearest H & K office today—for General Catalog

THE Harrington & King PERFORATING CO. INC.

Chicago Office and Warehouse
5627 Fillmore Street
Chicago 44, Illinois

New York Office and Warehouse
118 Liberty Street
New York, New York

PRECISION GRINDING Since 1944

Steel Mill • Rubber
Paint • Ink • Banbury
Calender Rolls

Investigate Universal's prompt, economical service for your largest roll grinding needs.

22" x 240" Roll Grinder with Superfinish

GRINDING SPECIALISTS

Centerless • Internal
External • Surface
Hyprolap • Blanchard

Contract grinding for millright service or parts finishing. Universal offers you one-source service covering *all* types of grinding with sufficient machines of each class to assure prompt service and low cost.

Telephone today and see (MAin 1-4363)

UGC UNIVERSAL GRINDING CORP.

2200 Scranton Road, Cleveland 13, Ohio

adopted the same net pricing procedure that was announced recently in Pittsburgh and Cleveland.

Semifinished Steel . . .

Semifinished Prices, Page 131

If a steel strike continues to threaten, mills are expected to pour ingots as long as they can. The reason: They want to have the best possible inventory of semifinished steel when operations resume.

Inquiry indicates that the after-strike startup won't be handicapped by lack of semifinished.

May Steel Production Is Greatest for Any Month

For three straight months, production of steel for ingots and castings has exceeded 11 million net tons.

A new monthly record was established in May, when the nation's furnaces poured 11,600,000 net tons, reports the American Iron & Steel Institute. The previous all-time monthly peak was reached in March at 11,567,745 tons.

April output was 11,281,290 tons.

Production in the first five months of the year also was record breaking, totaling 53,369,988 tons, up 74 per cent from the 30,625,007 tons poured in the corresponding period of 1958. The previous record for the first five months in any year was in 1956 at 52.9 million tons.

Barring an unlikely collapse in production this month, a first half record output is certain. To beat the unbroken record of 62.6 million tons set in 1956, it will be necessary for the mills to pour only a little more than 9 million tons in June.

According to the institute's index of steelmaking, May output was 163.1 in terms of average production in 1947-49. That compared with 163.9 during April, and 88.6 in May a year ago. The index for the first five months was 154.0 vs. 88.4 last year.

Based on Jan. 1, 1959 capacity of 147,633,670 net tons, the industry operated at an average of 92.5 per cent in May vs. 93 per cent in April. The rate was 87.4 per cent in May, 1958, when capacity was 140,742,570 tons.

Steel Ingot Production—May, 1959

Period	OPEN HEARTH (Net tons)	BESSEMER (Net tons)	OXYGEN PROCESS (Net tons)	ELECTRIC (Net tons)	TOTAL (Net tons)	Per cent of capacity
1959						
January ...	8,280,985	120,005	186,820	729,575	9,317,385	74.3
February ..	8,541,031	128,515	176,970	756,422	9,602,938	84.8
March	10,216,474	184,892	236,595	929,784	11,567,745	92.3
1st. Qtr. ..	27,038,490	433,412	600,385	2,415,781	30,488,068	83.8
*April	9,884,322	195,730	237,018	964,850	11,281,920	93.0
†May	10,118,000	201,000	257,000	1,024,000	11,600,000	92.5

Period	OPEN HEARTH Net tons	OPEN HEARTH Per cent of capacity	BESSEMER Net tons	BESSEMER Per cent of capacity	ELECTRIC Net tons	ELECTRIC Per cent of capacity	TOTAL Net tons	TOTAL Per cent of capacity
1958								
January ..	6,085,124	58.6	121,338	35.5	547,440	44.8	6,753,912	56.5
February .	5 252.112	56.0	81.597	26.4	448,614	40.6	5,782,323	53.6
March	5 598.944	53.9	122,317	35.8	533,361	43.6	6,254,622	52.3
1st Qtr. ..	16,936,180	56.2	325,252	32.8	1,529,425	43.1	18,790,857	54.1
April	4,875,619	48.5	109,433	33.1	547,939	46.3	5,532,991	47.8
May	5 602 123	53.9	110.366	32.3	588,670	48.2	6,301,159	52.7
June	6,378,942	63.4	88,125	26.6	660,413	55.8	7,127,480	61.6
2nd Qtr. ..	16,856.684	55.3	307.924	30.7	1,797,022	50.1	18,961,630	54.0
1st 6 Mo..	33,792,864	55.7	633,176	31.7	3,326,447	46.6	37,752,487	54.1
July	5,712.587	55.0	114.218	33.4	615,600	50.4	6,442,405	53.9
August ...	6,481,185	62.4	134,435	39.3	692,383	56.6	7,308,003	61.1
September.	6,769 660	67.3	103 194	31.2	759 518	64.2	7,632,372	66.0
3rd Qtr. ..	18,963,432	61.5	351,847	34.7	2,067,501	57.0	21,382,780	60.3
9 Mo.	52,756,296	57.7	985,023	32.7	5,393,948	50.1	59,135,267	56.2
October ...	7,795,541	75.0	148,458	43.4	895 779	73.3	8,839,778	74.0
November..	7,572,555	75.3	145,867	44.1	850,896	71.9	8,569,318	74.1
December .	7,755.002	74.6	116,637	34.1	838,883	68.6	8,710.522	72.9
4th Qtr. ..	23,123.098	75.0	410,962	40.5	2,585 558	71.3	26,119,618	73.6
2nd 6 Mo..	42,086,530	68.3	762,809	37.6	4,653,059	64.1	47,502,398	67.0
Total	75,879,394	62.0	1,395,985	34.7	7,979,506	55.4	85,254,885	60.6

Note—The percentages are based on annual capacities as of Jan. 1, 1959: Open hearth, 126,528,380 net tons; bessemer, 3,577,000 net tons; basic oxygen process, 4,033,160 net tons; electric and crucible, 13,495,130 net tons. Total: 147,633,670 net tons. In 1958, the capacity tonnages were: Open hearth, 122,321,830 net tons; bessemer, 4,027,000 net tons; oxygen process, electric and crucible, 14,393,740 net tons. Total: 140,742,570 net tons.
*Revised. †Preliminary.

DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

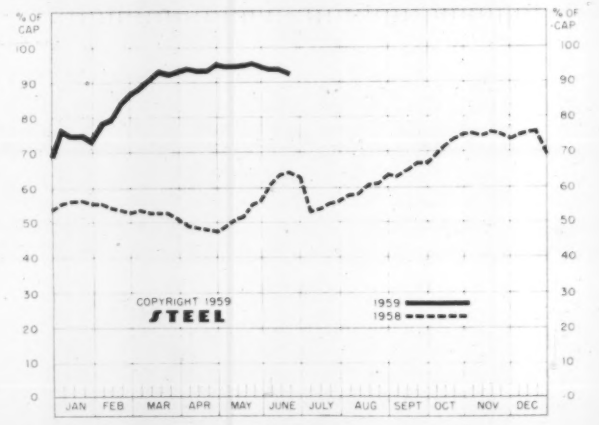
	Week Ended June 21	Change	Same Week 1958	Same Week 1957
Pittsburgh	97	+ 2*	60	88
Chicago	95	+ 0.5	71	84.5
Eastern	95	— 2	62	94.5
Youngstown	92	— 3	53	80
Wheeling	88.5	— 2	70	83.5
Cleveland	95	+ 5.5*	49	87
Buffalo 107.5		0	53.5	102.5
Birmingham	92	— 5	66	92.5
Cincinnati	94	0*	64	79
St. Louis	89	—15	86	56.5
Detroit	94	— 4.5*	69	100
Western	97	— 1	72	101
National Rate ..	92.5	— 1.5	64.5	88

INGOT PRODUCTION‡

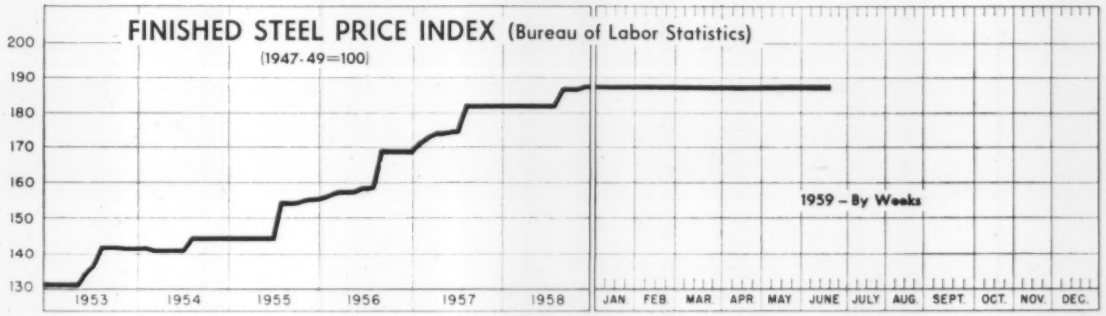
	Week Ended June 21	Week Ago	Month Ago	Year Ago
INDEX ..... (1947-49=100)	163.8†	162.1	164.6	109.1
NET TONS .... (In thousands)	2,631†	2,604	2,644	1,751

*Change from preceding week's revised rate. †Estimated. ‡American Iron & Steel Institute.
Weekly capacity (net tons): 2,831,331 in 1959; 2,699,173 in 1958; 2,559,490 in 1957.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



June 16, 1959	Week Ago	Month Ago	May Avg.	Year Ago
186.7	**186.7**	**186.7**	**186.7**	**181.5**

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended June 16

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.825	Bars, Reinforcing	6.385
Rails, Light, 40 lb	7.292	Bars, C.F., Carbon	10.710
Tie Plates	6.875	Bars, C.F., Alloy	14.125
Axles, Railway	10.175	Bars, C.F., Stainless, 302 (lb)	0.570
Wheels, Freight Car, 33 in. (per wheel)	62.000	Sheets, H.R., Carbon	6.350
Plates, Carbon	6.350	Sheets, C.R., Carbon	7.300
Structural Shapes	6.167	Sheets, Galvanized	8.615
Bars, Tool Steel, Carbon (lb)	0.560	Sheets, C.R., Stainless, 302 (lb)	0.658
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.680	Sheets, Electrical	12.625
Bars, Tool Steel, H.R. Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.060 (lb)	1.400	Strip, C.R., Carbon	9.489
Bars, Tool Steel, H.R. Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.895	Strip, C.R., Stainless, 430 (lb)	0.480
Bars, H.R., Alloy	10.775	Strip, H.R., Carbon	6.250
Bars, H.R., Stainless, 303 (lb)	0.543	Pipe, Black, Buttweld (100 ft)	19.905
Bars, H.R., Carbon	6.675	Pipe, Galv., Buttweld (100 ft)	23.253
		Pipe, Line (100 ft)	199.533
		Casing, Oil Well, Carbon (100 ft)	201.080
		Casing, Oil Well, Alloy (100 ft)	315.213
		Tubes, Boiler (100 ft)	51.200
		Tubing, Mechanical, Carbon (100 ft)	27.005
		Tubing, Mechanical, Stainless, 304 (100 ft)	205.608
		Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	10.100
		Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.800
		Black Plate, Canmaking Quality (95 lb base box)	7.900
		Wire, Drawn, Carbon	10.575
		Wire, Drawn, Stainless, 430 (lb)	0.665
		Bale Ties (bundles)	7.967
		Nails, Wire, 8d Common	9.825
		Wire, Barbed (80-rod spool)	8.722
		Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	June 17 1959	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	247.82	247.82	247.82	239.15	189.75
Index in cents per lb	6.713	6.713	6.713	6.479	5.140

STEEL's ARITHMETICAL COMPOSITES*

Finished Steel, NT	$149.96	$149.96	$149.96	$145.52	$113.20
No. 2 Fdry, Pig Iron, GT	66.49	66.49	66.49	66.49	56.54
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	56.04
Malleable Pig Iron, GT	67.27	67.27	67.27	67.27	57.27
Steelmaking Scrap, GT	36.50	35.50	33.33	35.00	27.83

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts in cents per pound except as otherwise noted. Delivered prices based on nearest productic.i point.

FINISHED STEEL

	June 17 1959	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.675	5.675	5.675	5.425	4.15
Bars, H.R., Chicago	5.675	5.675	5.675	5.425	4.15
Bars, H.R., deld., Philadelphia	5.975	5.975	5.975	5.725	4.405
Bars, C.F., Pittsburgh	7.65*	7.65*	7.65*	7.30*	5.20
Shapes, Std., Pittsburgh	5.50	5.50	5.50	5.275	4.10
Shapes, Std., Chicago	5.50	5.50	5.50	5.275	4.10
Shapes, deld., Philadelphia	5.77	5.77	5.77	5.545	4.38
Plates, Pittsburgh	5.30	5.30	5.30	5.10	4.10
Plates, Chicago	5.30	5.30	5.30	5.10	4.10
Plates, Coatesville, Pa.	5.30	5.30	5.30	5.10	4.10
Plates, Sparrows Point, Md.	5.30	5.30	5.30	5.10	4.10
Plates, Claymont, Del.	5.30	5.30	5.30	5.10	4.10
Sheets, H.R., Pittsburgh	5.10	5.10	5.10	4.925	3.925
Sheets, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Sheets, C.R., Pittsburgh	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Chicago	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Detroit	6.275	6.275	6.275	6.05	4.975
Sheets, Galv., Pittsburgh	6.875	6.875	6.875	6.60	5.275
Strip, H.R., Pittsburgh	5.10	5.10	5.10	4.925	4.425
Strip, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Strip, C.R., Pittsburgh	7.425	7.425	7.425	7.15	5.45
Strip, C.R., Chicago	7.425	7.425	7.425	7.15	5.70
Strip, C.R., Detroit	7.425	7.425	7.425	7.15	5.65
Wire, Basic, Pittsburgh	8.00	8.00	8.00	7.65	5.525
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.95	6.55
Tin plate(1.50 lb)box, Pitts.	$10.65	$10.65	$10.65	$10.30	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL

Billets, forging, Pitts. (NT)	$99.50	$99.50	$99.50	$96.00	$75.50
Wire rods $\frac{7}{32}$-$\frac{5}{8}$" Pitts.	6.40	6.40	6.40	6.15	4.525

PIG IRON, Gross Ton

	June 17 1959	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pittsburgh	$67.00	$67.00	$67.00	$67.00	$57.00
Basic, Valley	66.00	66.00	66.00	66.00	56.00
Basic, deld., Philadelphia	70.41	70.41	70.41	70.41	59.66
No. 2 Fdry, NevilleIsland,Pa.	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, Chicago	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	70.91	60.16
No. 2 Fdry, Birmingham	62.50	62.50	62.50	62.50	52.88
No. 2 Fdry(Birm.)deld., Cin.	70.20	70.20	70.20	70.20	60.13
Malleable, Valley	66.50	66.50	66.50	66.50	56.50
Malleable, Chicago	66.50	66.50	66.50	66.50	56.50
Ferromanganese, net ton†	245.00	245.00	245.00	245.00	200.00

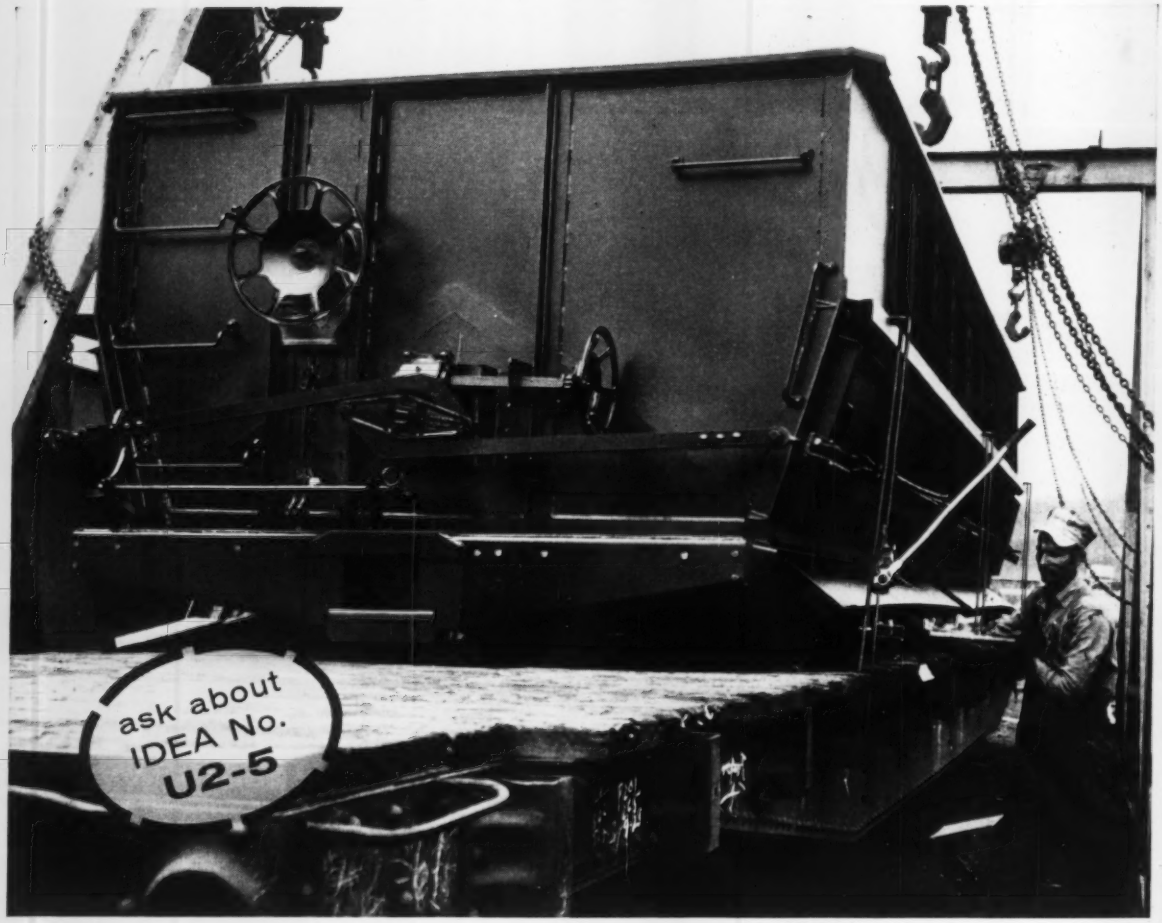
†74-76% Mn, Duquesne, Pa.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt Pittsburgh	$36.50	$35.50	$34.50	$35.50	$29.50
No. 1 Heavy melt E. Pa.	38.00	36.00	33.50	34.00	23.00
No. 1 Heavy Melt, Chicago	35.00	35.00	32.00	35.50	31.00
No. 1 Heavy Melt, Valley	39.50	39.50	35.50	36.50	29.50
No. 1 Heavy Melt, Cleve.	36.50	36.50	33.50	33.00	28.50
No. 1 Heavy Melt, Buffalo	33.50	33.50	31.50	26.50	26.50
Rails, Rerolling, Chicago	58.50	58.50	55.50	52.50	44.50
No. 1 Cast, Chicago	50.50	50.50	47.50	41.50	38.50

COKE, Net Ton

Beehive, Furn., Connlsvl.	$15.00	$15.00	$15.00	$15.25	$14.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.25	16.75
Oven, Fdry., Milwaukee	32.00	32.00	32.00	30.50	25.25



Call your AIM*... Ortner Co. did...

Savings Gained from Car Bracing Idea

Acme Idea Man A. F. O'Brien worked with Ortner in developing this money-saving car bracing method.

ORTNER COMPANY, CINCINNATI, OHIO, was looking for a method for securing railroad hopper car bodies and components to flat cars for transit to a gulf coast port, where they would be shipped overseas. The method used would have to meet approval of the railroads and provide damage-free shipment. Heavy-duty Acme Steel Strapping was selected as the bracing material, and their Acme Idea Man helped work out a method that received railroad approval. (Idea No. U2-5)

Acme Steel Strapping secures the hopper body to the flat car, and the trucks are braced at each end of the body.

Ortner Company finds that by using steel strapping the hopper cars are loaded and braced in about half the time and at about one-third the material cost required by other bracing methods.

***Call your Acme Idea Man.** He will show you how Acme Steel Strapping can help solve your product handling and shipping problems. Phone him at the nearest Acme Steel office. Or write Dept. SDU-69, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Company of Canada, Ltd., 743 Warden Ave., Toronto 13, Ontario.

ACME STEEL **STEEL STRAPPING**

Steel Prices

Mill prices as reported to STEEL, June 17, cents per pound except as otherwise noted. *Changes shown in italics.* Code number following mill point indicates producing company. Key to producers, page 132; footnotes, page 134.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 ....$76.00

INGOTS, Alloy (NT)
Detroit S41 ....$82.00
Economy,Pa. B14 ....82.00
Farrell,Pa. S3 ....82.00
Lowellville,O. S3 ....82.00
Midland,Pa. C18 ....82.00
Munhall,Pa. U5 ....82.00
Sharon,Pa. S3 ....82.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bartonville,Ill. K4 ....$82.00
Bessemer,Pa. U5 ....80.00
Buffalo R2 ....80.00
Clairton,Pa. U5 ....80.00
Ensley,Ala. T2 ....80.00
Fairfield,Ala. T2 ....80.00
Fontana,Calif. K1 ....80.00
Gary,Ind. U5 ....90.50
Johnstown,Pa. B2 ....80.00
Lackawanna,N.Y. B2 ..80.00
Munhall,Pa. U5 ....80.00
Owensboro,Ky G8 ....80.00
S.Chicago,Ill. R2, U5 ..80.00
S.Duquesne,Pa. U5 ....80.00
Sterling,Ill. N15 ....80.00
Youngstown R2 ....80.00

Carbon, Forging (NT)
Bessemer,Pa. U5 ....$99.50
Buffalo R2 ....99.50
Canton,O. R2 ....99.50
Clairton,Pa. U5 ....102.00
Conshohocken Pa. A3 ..99.50
Ensley,Ala. T2 ....104.50
Fairfield,Ala. T2 ....99.50
Farrell,Pa. S3 ....99.50
Fontana,Calif. K1 ....99.50
Gary,Ind. U5 ....109.00
Geneva,Utah C11 ....99.50
Houston S5 ....99.50
Johnstown,Pa. B2 ....104.50
Lackawanna,N.Y. B2 ..99.50
LosAngeles B3 ....99.50
Midland,Pa. C18 ....109.00
Munhall,Pa. U5 ....99.50
Owensboro,Ky. G8 ....99.50
Seattle B3 ....99.50
Sharon,Pa. S3 ....109.00
S.Chicago R2, U5, W14 ..99.50
S.Duquesne,Pa. U5 ....99.50
S.SanFrancisco B3 ....109.00
Warren,O. C17 ....99.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$119.00
Bridgeport,Conn. C32 ..119.00
Buffalo R2 ....119.00
Canton,O. R2, T7 ....119.00
Conshohocken,Pa. A3 ..126.00
Detroit S41 ....119.00
Economy,Pa. B14 ....119.00
Farrell,Pa. S3 ....119.00
Fontana,Calif. K1 ....140.00
Gary,Ind. U5 ....119.00
Houston S5 ....124.00
Ind.Harbor,Ind. Y1 ....119.00
Johnstown,Pa. B2 ....119.00
Lackawanna,N.Y. B2 ..119.00
LosAngeles B3 ....139.00
Lowellville,O. S3 ....119.00
Massillon,O. R2 ....119.00
Midland,Pa. C18 ....119.00
Munhall,Pa. U5 ....119.00
Owensboro,Ky. G8 ....119.00
Sharon,Pa. S3 ....119.00
S.Chicago R2,U5,W14 ..119.00
S.Duquesne,Pa. U5 ....119.00
Struthers,O. Y1 ....119.00
Warren,O. C17 ....119.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 ....$122.50
Canton,O. R2 ....125.00
Cleveland R2 ....122.50
Gary,Ind. U5 ....122.50
S.Chicago,Ill. R2, W14 122.50
S.Duquesne,Pa. U5 ..122.50
Warren,O. C17 ....122.50

SKELP
Aliquippa,Pa. J5 ....5.05
Munhall,Pa. U5 ....5.05
Pittsburgh J5 ....5.05
Warren,O. R2 ....5.05
Youngstown R2, U5 ....5.05

WIRE RODS
AlabamaCity,Ala. R2 ..6.40
Aliquippa,Pa. J5 ....6.40
Alton,Ill. L1 ....6.60
Bartonville,Ill. K4 ....6.60
Buffalo W12 ....6.50
Cleveland A7 ....6.40
Donora,Pa. A7 ....6.40
Fairfield,Ala. T2 ....6.40
Houston S5 ....6.65
IndianaHarbor,Ind. Y1..6.40
Johnstown,Pa. B2 ....6.40
Joliet,Ill. A7 ....6.40
KansasCity,Mo. S5 ....6.65
Kokomo,Ind. C16 ....6.50
LosAngeles B3 ....7.20
Minnequa,Colo. C10 ....6.65
Monessen,Pa. P7 ....6.40
N.Tonawanda,N.Y. B11..6.40
Pittsburg,Calif. C11 ....7.20
Portsmouth,O. P12 ....6.40
Roebling,N.J. R5 ....6.50
S.Chicago,Ill. R2, W14 ..6.40
SparrowsPoint,Md. B2 ..6.50
Sterling,Ill.(1) N15 ....6.40
Sterling,Ill N15 ....6.50
Struthers,O. Y1 ....6.40
Worcester,Mass. A7 ....6.70

STRUCTURALS

Carbon Steel Std. Shapes
AlabamaCity,Ala. R2 ..5.50
Aliquippa,Pa. J5 ....5.50
Atlanta A11 ....5.70
Bessemer,Ala. T2 ....5.50
Bethlehem,Pa. B2 ....5.55
Birmingham C15 ....5.50
Clairton,Pa. U5 ....5.50
Fairfield,Ala. T2 ....5.50
Fontana,Calif. K1 ....6.30
Gary,Ind. U5 ....5.50
Geneva,Utah C11 ....5.60
Houston S5 ....5.60
Ind.Harbor,Ind. I-2, Y1 5.50
Johnstown,Pa. B2 ....5.55
Joliet,Ill. P22 ....5.50
KansasCity,Mo. S5 ....5.60
Lackawanna,N.Y. B2 ....5.55
LosAngeles B3 ....6.20
Minnequa,Colo. C10 ....5.80
Munhall,Pa. U5 ....5.50
Niles,Calif. P1 ....6.25
Phoenixville,Pa. P4 ....5.55
Portland,Oreg. O4 ....6.25
Seattle B3 ....6.25
S.Chicago,Ill. U5, W14 ..5.50
S.SanFrancisco B3 ....6.15
Sterling,Ill. N15 ....5.50
Torrance,Calif. C11 ....6.20
Weirton,W.Va. W6 ....5.50

Wide Flange
Bethlehem,Pa. B2 ....5.55
Clairton,Pa. U5 ....5.50
Fontana,Calif. K1 ....6.45
IndianaHarbor,Ind. I-2..5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa. U5 ....5.50
Phoenixville,Pa. P4 ....5.55
S.Chicago,Ill. U5 ....5.50
Sterling,Ill. N15 ....5.50
Weirton,W.Va. W6 ....5.50

Alloy Std. Shapes
Aliquippa,Pa. J5 ....6.80
Clairton,Pa. U5 ....6.80
Gary,Ind. U5 ....6.80
Houston S5 ....6.90
Munhall,Pa. U5 ....6.80
S.Chicago,Ill. U5, W14..6.80

H.S., L.A., Std. Shapes
Aliquippa,Pa. J5 ....8.05
Bessemer,Ala. T2 ....8.05
Bethlehem,Pa. B2 ....8.10
Clairton,Pa. U5 ....8.05
Fairfield,Ala. T2 ....8.05
Fontana,Calif. K1 ....8.85
Gary,Ind. U5 ....8.05
Geneva,Utah C11 ....8.05
Houston S5 ....8.15
Ind.Harbor,Ind. I-2, Y1..8.05
Johnstown,Pa. B2 ....8.10
KansasCity,Mo. S5 ....8.15
Lackawanna,N.Y. B2 ..8.10
LosAngeles B3 ....8.75
Munhall,Pa. U5 ....8.05
Seattle B3 ....8.80
S.Chicago,Ill. U5, W14..8.05
S.SanFrancisco B3 ....8.70
Sterling,Ill. N15 ....7.75
Struthers,O. Y1 ....8.05

H.S., L.A., Wide Flange
Bethlehem,Pa. B2 ....8.10
Ind.Harbor,Ind. I-2 ....8.05
Lackawanna,N.Y. B2 ..8.10
Munhall,Pa. U5 ....8.05
S.Chicago,Ill. U5 ....8.05
Sterling,Ill. N15 ....7.75

PILING

BEARING PILES
Bethlehem,Pa. B2 ....5.55
Ind.Harbor,Ind. I-2 ....5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa. U5 ....5.50
S.Chicago,Ill. I-2, U5 ..5.50

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 ....6.50
Lackawanna,N.Y. B2 ..6.50
Munhall,Pa. U5 ....6.50
S.Chicago,Ill. I-2, U5 ..6.50
Weirton,W.Va. W6 ....6.50

PLATES

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..5.30
Aliquippa,Pa. J5 ....5.30
Ashland,Ky.(15) A10 ..5.30
Atlanta A11 ....5.50
Bessemer,Ala. T2 ....5.30
Clairton,Pa. U5 ....5.30
Claymont,Del. C22 ....5.30
Cleveland J5, R2 ....5.30
Coatesville,Pa. L7 ....5.30
Conshohocken,Pa. A3 ..5.30
Ecorse,Mich. G5 ....5.30
Fairfield,Ala. T2 ....5.30
Farrell,Pa. S3 ....5.30
Fontana,Calif.(30) K1 ..6.10
Gary,Ind. U5 ....5.30
Geneva,Utah C11 ....5.30
GraniteCity,Ill. G4 ....5.40
Harrisburg,Pa. P4 ....5.30
Houston S5 ....5.40
Ind.Harbor,Ind. I-2, Y1 5.30
Johnstown,Pa. B2 ....5.30
Lackawanna,N.Y. B2 ..5.30
Mansfield,O. E6 ....5.30
Minnequa,Colo. C10 ....6.15
Munhall,Pa. U5 ....5.30
Newport,Ky. A2 ....5.30
Pittsburgh J5 ....5.30
Riverdale,Ill. A1 ....5.30
Seattle B3 ....6.20
Sharon,Pa. S3 ....5.30
S.Chicago,Ill. U5, W14 ..5.20
SparrowsPoint,Md. B2 ..5.30
Sterling,Ill. N15 ....5.30
Steubenville,O. W10 ....5.30
Warren,O. R2 ....5.30
Youngstown U5, Y1 ....5.30
Youngstown (27) R2 ..5.30

PLATES, Carbon Abras. Resist.
Claymont,Del. C22 ....7.05
Fontana,Calif. K1 ....7.85
Geneva,Utah C11 ....7.05
Houston S5 ....7.15
Johnstown,Pa. B2 ....7.05
SparrowsPoint,Md. B2 ..7.05

PLATES, Wrought Iron
Economy,Pa. B14 ....13.55

PLATES, H.S., L.A.
Aliquippa,Pa. J5 ....7.95
Ashland,Ky. A10 ....7.95
Bessemer,Ala. T2 ....7.95
Clairton,Pa. U5 ....7.95
Claymont,Del. C22 ....7.95
Cleveland J5, R2 ....7.95
Coatesville,Pa. L7 ....7.95
Conshohocken,Pa. A3 ..7.95
Economy,Pa. B14 ....7.95
Ecorse,Mich. G5 ....7.95
Fairfield,Ala. T2 ....7.95
Farrell,Pa. S3 ....7.95
Fontana,Calif.(30) K1 ..8.75
Gary,Ind. U5 ....7.95
Geneva,Utah C11 ....7.95
Houston S5 ....8.05
Ind.Harbor,Ind. I-2, Y1..7.95
Johnstown,Pa. B2 ....7.95
Munhall,Pa. U5 ....7.95
Pittsburgh J5 ....7.95
Seattle B3 ....8.85
Sharon,Pa. S3 ....7.95
S.Chicago,Ill. U5, W14..7.95
SparrowsPoint,Md. B2 ..7.95
Warren,O. R2 ....7.95
Youngstown U5, Y1 ....7.95

PLATES, Alloy
Aliquippa,Pa. J5 ....7.50
Claymont,Del. C22 ....7.50
Coatesville,Pa. L7 ....7.50
Economy,Pa. B14 ....7.50
Farrell,Pa. S3 ....7.50
Fontana,Calif. K1 ....8.30
Gary,Ind. U5 ....7.50
Houston S5 ....7.60
Ind.Harbor,Ind. Y1 ....7.50
Johnstown,Pa. B2 ....7.50
Lowellville,O. S3 ....7.50
Munhall,Pa. U5 ....7.50
Newport,Ky. A2 ....7.50
Pittsburgh J5 ....7.50
Seattle B3 ....8.40
Sharon,Pa. S3 ....7.50
S.Chicago,Ill. U5, W14 ..7.50
SparrowsPoint,Md. B2 ..7.50
Youngstown Y1 ....7.50

FLOOR PLATES
Cleveland J5 ....6.375
Conshohocken,Pa. A3 ..6.375
Ind.Harbor,Ind. I-2 ..6.375
Munhall,Pa. U5 ....6.375
Pittsburgh J5 ....6.375
S.Chicago,Ill. U5 ....6.375

PLATES, Ingot Iron
Ashland c.l.(15) A10 ..5.55
Ashland l.c.l.(15) A10 ..6.05
Cleveland c.l. R2 ....6.05
Warren,O. c.l. R2 ....6.05

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala.City,Ala.(9) R2 ..5.675
Aliquippa,Pa. (9) J5 ..5.675
Alton,Ill. L1 ....5.875
Atlanta (9) A11 ....5.875
Bessemer,Ala.(9) T2 ..5.675
Birmingham(9) C15 ..5.675
Buffalo(9) R2 ....5.675
Canton,O. (23) R2 ....6.15
Clairton,Pa.(9) U5 ..5.675
Cleveland(9) R2 ....5.675
Ecorse,Mich.(9) G5 ....5.675
Emeryville,Calif. J7 ....6.425
Fairfield,Ala.(9) T2 ..5.675
Fairless,Pa.(9) U5 ....5.825
Fontana,Calif.(9) K1 ..6.375
Gary,Ind.(9) U5 ....5.675
Houston(9) S5 ....5.925
Ind.Harbor(9) I-2, Y1 5.675
Johnstown,Pa.(9) B2 ..5.675
Joliet,Ill. P22 ....5.675
KansasCity,Mo.(9) S5 ..5.925
Lackawanna(9) B2 ....5.675
LosAngeles(9) B3 ....6.375
Massillon,O. (23) R2 ....6.15
Midland,Pa.(23) C18 ....6.025
Milton,Pa. M18 ....5.825
Minnequa,Colo. C10 ....6.125
Niles,Calif. P1 ....6.375
N.T'wan'a,N.Y.(23)B11 6.025
Owensboro,Ky.(9) G8 ..6.025
Pittsburg,Calif.(9) C11 6.375
Pittsburgh(9) J5 ....5.675
Portland,Oreg. O4 ....6.425
Riverdale,Ill.(9) A1 ....5.675
Seattle A24, B3, N14 ..6.425
S.Ch'e'go(9)R2,U5,W14 5.675
S.Duquesne,Pa.(9) U5 ..5.675
S.SanFran.,Calif.(9)B3 6.425
Sterling,Ill.(1)(9) N15..5.675
Sterling,Ill.(9) N15 ....5.775
Struthers,O.(9) Y1 ....5.675
Tonawanda,N.Y. B12 ..5.675
Torrance,Calif.(9) C11 6.375
Warren,O. C17 ....6.025
Youngstown(9) R2, U5 5.675

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 ....6.725
Bethlehem,Pa. B2 ....6.725
Bridgeport,Conn. C32 ..6.80
Buffalo R2 ....6.725
Canton,O. R2, T7 ....6.725
Clairton,Pa. U5 ....6.725
Detroit S41 ....6.725
Economy,Pa. B14 ....6.725
Ecorse,Mich. G5 ....6.725
Fairless,Pa. U5 ....6.875
Farrell,Pa. S3 ....6.725
Fontana,Calif. K1 ....7.775
Gary,Ind. U5 ....6.725
Houston S5 ....6.975
Ind.Harbor,Ind. I-2, Y1 6.725
Johnstown,Pa. B2 ....6.725
KansasCity,Mo. S5 ....6.975
Lackawanna,N.Y. B2 ..6.725
LosAngeles B3 ....7.775
Lowellville,O. S3 ....6.725
Massillon,O. R2 ....6.725
Midland,Pa. C18 ....6.725
Owensboro,Ky. G8 ....6.725
Pittsburgh J5 ....6.725
Sharon,Pa. S3 ....6.725
S.Chicago R2, U5, W14 6.725
S.Duquesne,Pa. U5 ....6.725
Struthers,O. Y1 ....6.725
Warren,O. C17 ....6.725
Youngstown U5 ....6.725

BARS & SMALL SHAPES, H.R.
High-Strength, Low-Alloy
Aliquippa,Pa. J5 ....8.30
Bessemer,Ala. T2 ....8.30
Bethlehem,Pa. B2 ....8.30
Clairton,Pa. U5 ....8.30
Cleveland R2 ....8.30
Ecorse,Mich. G5 ....8.30
Fairfield,Ala. T2 ....8.30
Fontana,Calif. K1 ....9.00
Gary,Ind. U5 ....8.30
Houston S5 ....8.55
Ind.Harbor,Ind. Y1 ....8.30
Johnstown,Pa. B2 ....8.30
KansasCity,Mo. S5 ....8.55
Lackawanna,N.Y. B2 ..8.30
LosAngeles B3 ....9.00
Pittsburgh J5 ....8.30
Seattle B3 ....9.05
S.Chicago,Ill. R2, W14 ..8.30
S.Duquesne,Pa. U5 ....8.30
S.SanFrancisco B3 ....9.05
Struthers,O. Y1 ....8.30
Youngstown U5 ....8.30

BAR SIZE ANGLES: H.R. Carbon
Bethlehem,Pa.(9) B2 ..5.825
Houston(9) S5 ....5.925
KansasCity,Mo.(9)S5 ..5.925
Lackawanna(9) B2 ....5.675
Sterling,Ill. N15 ....5.775
Sterling,Ill.(1) N15 ....5.675
Tonawanda,N.Y. B12 ..5.675

BAR SIZE ANGLES: S. Shapes
Aliquippa,Pa. J5 ....5.675
Atlanta A11 ....5.875
Joliet,Ill. P22 ....5.675
Minnequa,Colo. C10 ....6.125
Niles,Calif. P1 ....6.375
Pittsburgh J5 ....6.375
Youngstown U5 ....6.80

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 ....6.80
Clairton,Pa. U5 ....6.80
Gary,Ind. U5 ....6.80
Houston S5 ....7.05
KansasCity,Mo. S5 ....7.05
Pittsburgh J5 ....6.80
Youngstown U5 ....6.80

BARS, C.F. Leaded (Including leaded extra)
Carbon
LosAngeles P2, S30 ..11.75*

Alloy
Ambridge,Pa. W18 ....10.175
BeaverFalls,Pa. M12..10.175
Camden,N.J. P13 ....10.35
Chicago W18 ....10.175
Elyria,O. W8 ....10.175
Monaca,Pa. S17 ....10.175
Newark,N.J. W18 ....10.35
SpringCity,Pa. K3 ....10.35

*Grade A; add 0.05c for Grade B.

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....7.65
BeaverFalls,Pa. M12,R2 7.65
Birmingham C15 ....8.25
Buffalo B5 ....7.70
Camden,N.J. P13 ....8.10
Carnegie,Pa. C12 ....7.65
Chicago W18 ....7.65
Cleveland A7, C20 ....7.65
Detroit B5, P17 ....7.85
Detroit S41 ....7.65
Donora,Pa. A7 ....7.65
Elyria,O. W8 ....7.65
FranklinPark,Ill. N5 ....7.65
Gary,Ind. R2 ....7.65
GreenBay,Wis. F7 ....7.65
Hammond,Ind. J5, L2 ....7.65
Hartford,Conn. R2 ....8.15
Harvey,Ill. B5 ....7.65
LosAngeles(49) S30 ....9.10
LosAngeles(49) P2, R2 9.10
Mansfield,Mass. B5 ....8.20
Massillon,O. R2, R8 ....7.65
Midland,Pa. C18 ....7.65
Monaca,Pa. S17 ....7.65
Newark,N.J. W18 ....8.10
NewCastle,Pa.(17) B4 ....7.65
Pittsburgh J5 ....7.65
Plymouth,Mich. P5 ....7.90
Putnam,Conn. W18 ....8.20
Readville,Mass. C14 ....8.20
S.Chicago,Ill. W14 ....7.65
SpringCity,Pa. K3 ....8.10
Struthers,O. Y1 ....7.65
Warren,O. C17 ....7.65
Waukegan,Ill. A7 ....7.65
Willimantic,Conn. J5 ....8.15
Youngstown F3, Y1 ....7.65

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md.(5) C19 6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....9.025
BeaverFalls,Pa.M12,R2 9.025
Bethlehem,Pa. B2 ....9.025
Bridgeport,Conn. C32 ..9.175
Buffalo B5 ....9.025
Camden,N.J. P13 ....9.20
Canton,O. T7 ....9.025
Carnegie,Pa. C12 ....9.025
Chicago W18 ....9.025
Cleveland A7, C20 ....9.025
Detroit B5, P17 ....9.225
Detroit S41 ....9.025
Donora,Pa. A7 ....9.025
Elyria,O. W8 ....9.025
FranklinPark,Ill. N5 ....9.025
Gary,Ind. R2 ....9.025
GreenBay,Wis. F7 ....9.025
Hammond,Ind. J5, L2 ..9.025
Hartford,Conn. R2 ....9.325
Harvey,Ill. B5 ....9.025
Lackawanna,N.Y. B2 ..9.025
LosAngeles P2, S30 ..11.00
Mansfield,Mass. B5 ..9.325
Massillon,O. R2, R8 ....9.025
Midland,Pa. C18 ....9.025
Monaca,Pa. S17 ....9.025
Newark,N.J. W18 ....9.20
Plymouth,Mich. P5 ....9.225
S.Chicago,Ill. W14 ....9.025
SpringCity,Pa. K3 ....9.20
Struthers,O. Y1 ....9.025
Warren,O. C17 ....9.025
Waukegan,Ill. A7 ....9.025
Willimantic,Conn. J5 ....9.325
Worcester,Mass. A7 ....9.325
Youngstown F3, Y1 ....9.025

BARS, Reinforcing, Billet (T Fabricated)

AlabamaCity,Ala. R2 ..5.675
Atlanta A11 .....5.675
Birmingham C15 .....5.675
Buffalo R2 .....5.675
Cleveland R2 .....5.675
Ecorse,Mich. G5 .....5.675
Emeryville,Calif. J7 ..6.425
Fairfield,Ala. T2 .....5.675
Fairless,Pa. U5 .....5.825
Fontana,Calif. K1 .....6.375
Ft.Worth,Tex(4)(26)T4 5.925
Gary,Ind. U5 .....5.675
Houston S5 .....5.925
Ind.Harbor,Ind. I-2, Y1 5.675
Johnstown,Pa. B2 .....5.675
Joliet,Ill. P22 .....5.675
KansasCity,Mo. S5 ..5.925
Kokomo,Ind. C16 .....5.775
Lackawanna,N.Y. B2 ..5.675
LosAngeles B3 .....6.375
Madison,Ill. L1 .....5.875
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ..6.125
Niles,Calif. P1 .....6.375
Pittsburg,Calif. C11 ..6.375
Pittsburgh J5 .....5.675
Portland,Oreg. O4 ..6.425
SandSprings,Okla. S5 ..5.925
Seattle A24, B3, N14 ..6.425
S.Chicago,Ill. R2, W14 5.675
S.Duquesne,Pa. U5 ..5.675
S.SanFrancisco B3 ..6.425
SparrowsPoint,Md. B2..5.675
Sterling,Ill.(1) N15 ..5.675
Sterling,Ill. N15 .....5.775
Struthers,O. Y1 .....5.675
Tonawanda,N.Y. B12 ..6.10
Torrance,Calif. C11 ..6.375
Youngstown R2, U5 ..5.675

BARS, Reinforcing, Billet (Fabricated: To Consumers)

Baltimore B2 .....7.42
Boston B2, U8 .....8.15
Chicago U8 .....7.41
Cleveland U8 .....7.39
Houston S5 .....7.60
Johnstown,Pa. B2 .....7.33
KansasCity,Mo. S5 ..7.60
Lackawanna,N.Y. B2 ..7.35
Marion O. P11 .....6.70
Newark,N.J. U8 .....7.80
Philadelphia U8 .....7.63
Pittsburgh J5, U8 ..7.35
SandSprings,Okla. S5 ..7.60
Seattle A24, B3, N14 ..7.95
SparrowsPt.,Md. B2 ..7.33
St.Paul U8 .....8.17
Williamsport,Pa. S19 ..7.25

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.90
Economy,Pa.(D.R.)B14 18.55
Economy(Staybolt) B14 19.00
McK.Rks.(S.R.) L5 ..14.50
McK.Rks.(D.R.) L5 ..19.80
McK.Rks.(Staybolt)L5 20.95

BARS, Rail Steel

ChicagoHts.(3) C2, I-2 5.575
ChicagoHts.(4) (44) I-2 5.675
ChicagoHts.(4) C2 ...5.675
Franklin,Pa. (3) F5 ..5.575
Franklin,Pa. (4) F5 ..5.675
JerseyShore,Pa.(3) J8 ..5.55
Marion,O.(3) P11 ....5.575
Tonawanda(3) B12 ....5.575
Tonawanda(4) B12 ....6.10

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

AlabamaCity,Ala. R2 ..5.10
Allenport,Pa. P7 .....5.10
Aliquippa,Pa. J5 .....5.10
Ashland,Ky.(8) A10 ..5.10
Cleveland J5, R2 .....5.10
Conshohocken,Pa. A3 ..5.15
Detroit(8) M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Fairless,Pa. U5 .....5.15
Farrell,Pa. S3 .....5.10
Fontana,Calif. K1 .....5.825
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.20
GraniteCity,Ill.(8) G4 ..5.20
Ind.Harbor,Ind. I-2, Y1..5.10
Irvin,Pa. U5 .....5.10
Lackawanna,N.Y. B2 ..5.10
Mansfield,O. E6 .....5.10
Munhall,Pa. U5 .....5.10
Newport,Ky. A2 .....5.10
Niles,O. M21, S3 .....5.10
Pittsburg,Calif. C11 ..5.80
Pittsburgh J5 .....5.10
Portsmouth,O. P12 .....5.10
Riverdale,Ill. A1 .....5.10
Sharon,Pa. S3 .....5.10
S.Chicago,Ill. U5, W14..5.10
SparrowsPoint,Md. B2 ..5.10
Steubenville,O. W10 ..5.10
Warren,O. R2 .....5.10
Weirton,W.Va. W6 .....5.10
Youngstown U5, Y1 ..5.10

SHEETS, H.R. (19 Ga. & Lighter)

Niles,O. M21, S3 .....6.275

SHEETS, H.R., Alloy

Gary,Ind. U5 .....8.40
Ind.Harbor,Ind. Y1 .....8.40
Irvin,Pa. U5 .....8.40
Munhall,Pa. U5 .....8.40
Newport,Ky. A2 .....8.40
Youngstown U5, Y1 .....8.40

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....7.525
Ashland,Ky. A10 .....7.525
Cleveland J5, R2 .....7.525
Conshohocken,Pa. A3 ..7.575
Ecorse,Mich. G5 .....7.525
Fairfield,Ala. T2 .....7.525
Fairless,Pa. U5 .....7.575
Farrell,Pa. S3 .....7.525
Fontana,Calif. K1 .....8.25
Gary,Ind. U5 .....7.525
Ind.Harbor,Ind. I-2, Y1 7.575
Irvin,Pa. U5 .....7.525
Lackawanna(35) B2 .....7.525
Munhall,Pa. U5 .....7.525
Niles,O. S3 .....7.525
Pittsburgh J5 .....7.525
S.Chicago,Ill. U5, W14 7.525
Sharon,Pa. S3 .....7.525
SparrowsPoint(36) B2 ..7.525
Warren,O. R2 .....7.525
Weirton,W.Va. W6 .....7.525
Youngstown U5, Y1 ..7.525

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ..5.35
Cleveland R2 .....5.875
Warren,O. R2 .....5.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....7.05
Middletown,O. A10 ....6.775
Warren,O. R2 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 .6.275
Allenport,Pa. P7 .....6.275
Aliquippa,Pa. J5 .....6.275
Cleveland J5, R2 .....6.275
Conshohocken,Pa. A3 .6.325
Detroit M1 .....6.275
Ecorse,Mich. G5 .....6.275
Fairfield,Ala. T2 .....6.275
Fairless,Pa. U5 .....6.325
Follansbee,W.Va. F4 .6.275
Fontana,Calif. K1 .....7.40
Gary,Ind. U5 .....6.275
GraniteCity,Ill. G4 .....6.375
Ind.Harbor,Ind. I-2, Y1 6.275
Irvin,Pa. U5 .....6.275
Lackawanna,N.Y. B2 .6.275
Mansfield,O. E6 .....6.275
Middletown,O. A10 .....6.275
Newport,Ky. A2 .....6.275
Pittsburg,Calif. C11 .....7.225
Pittsburgh J5 .....6.275
Portsmouth,O. P12 .....6.275
SparrowsPoint,Md. B2..6.275
Steubenville,O. W10 ..6.275
Warren,O. R2 .....6.275
Weirton,W.Va. W6 .....6.275
Yorkville,O. W10 .....6.275
Youngstown Y1 .....6.275

SHEETS, Cold-Rolled, High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....9.275
Cleveland J5, R2 .....9.275
Ecorse,Mich. G5 .....9.275
Fairless,Pa. U5 .....9.325
Fontana,Calif. K1 ....10.40
Gary,Ind. U5 .....9.275
Ind.Harbor,Ind. I-2, Y1 9.275
Lackawanna(37) B2 ..9.275
Pittsburgh J5 .....9.275
SparrowsPoint(38) B2..9.275
Warren,O. R2 .....9.275
Weirton,W.Va. W6 ...9.275
Youngstown Y1 .....9.275

SHEETS, Culvert

	Cu Steel	Cu Fe
Ala.City,Ala. R2	7.225	....
Ashland,Ky. A10	7.225	7.475
Canton,O. R2	7.225	7.75
Fairfield T2	7.225	7.475
Gary,Ind. U5	7.225	7.475
GraniteCity,Ill.G4	7.325	....
Ind.Harbor I-2	7.225	7.475
Irvin,Pa. U5	7.225	7.475
Kokomo,Ind. C16	7.325	....
MartinsFry. W10	7.225	7.475
Pitts.,Calif. C11	7.975	....
Pittsburgh J5	7.225	....
SparrowsPt. B2	7.225	....

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ...7.475

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2 .6.875‡
Ashland,Ky. A10 ..6.875‡
Canton,O. R2 .....6.875‡
Dover,O. E6 .....6.875†
Fairfield,Ala. T2 .....6.875†
Gary,Ind. U5 .....6.875†
GraniteCity,Ill. G4 ..6.975*
Ind.Harbor,Ind. I-2 ..6.875†
Irvin,Pa. U5 .....6.875†
Kokomo,Ind. C16 ..6.975‡
MartinsFerry,O. W10 6.875*
Middletown,O. A10 ..6.875†
Pittsburg,Calif. C11 .7.625*
Pittsburgh J5 .....6.875†
SparrowsPt.,Md. B2 ..6.875†
Warren,O. R2 .....6.875†
Weirton,W.Va. W6 ..6.875*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Wall Casing

Fontana,Calif. K1 ....7.325

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....10.125
Pittsburgh J5 .....10.125
SparrowsPt.(39) B2 ..10.025

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.275
Irvin,Pa. U5 .....7.275

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 ....7.125
Middletown,O. A10 ....7.125

SHEETS, Electrogalvanized

Cleveland(28) B2 ....7.65
Niles,O.(28) R2 .....7.65
Weirton,W.Va. W6 ....7.50
Youngstown J5 .....7.50

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.525
Butler,Pa. A10 (type 2) 9.625

SHEETS, Enameling Iron

Ashland,Ky. A10 .....6.775
Cleveland R2 .....6.775
Fairfield,Ala. T2 .....6.775
Gary,Ind. U5 .....6.775
GraniteCity,Ill. G4 .....6.875
Ind.Harbor,Ind. I-2, Y1 6.775
Irvin,Pa. U5 .....6.775
Middletown,O. A10 .....6.775
Niles,O. M21, S3 .....6.775
Youngstown Y1 .....6.775

BLUED STOCK, 29 Gage

Dover,O. E6 .....8.70
Follansbee,W.Va. F4 ....8.70
Ind.Harbor,Ind. I-2 ....8.70
Mansfield,O. E6 .....8.70
Warren,O. R2 .....8.70
Yorkville,O. W10 .....8.70

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va.W10 7.225
Gary,Ind. U5 .....7.225
Mansfield,O. E6 .....7.225
Middletown,O. A10 .....7.225
Niles,O. M21, S3 .....7.225
Warren,O. R2 .....7.225
Weirton,W.Va. W6 .....7.225

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.625

Key to Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A24 Alaska Steel Mills Inc.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel Div., U. S. Steel Corp.
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.

D2 Detroit Steel Corp.
D4 Disston Div., H.K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&FuelAssoc.
E2 Eastern Stainless Steel
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.
E10 Enamel Prod. & Plating

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Specialty Wire Co. Inc.
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W. Co.
N20 Neville Ferro Alloy Co.

O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons,John A.
R6 Rome Strip Steel Co.
R8 Reliance Div.,Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless & Strip Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.
S43 Seymour Mfg. Co.
S44 Screw & Bolt Corp. of America
T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U3 Union Wire Rope Corp.
U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.
U11 Union Carbide Metals Co.
U13 Union Steel Corp.
V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.
W1 Wallace Barnes Steel Div., Associated Spring Corp.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet&Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2 ...5.10
Allenport,Pa. P7 ...5.10
Alton,Ill. L1 ...5.30
Ashland,Ky.(8) A10 ...5.10
Atlanta A11 ...5.10
Bessemer,Ala. T2 ...5.10
Birmingham C15 ...5.10
Buffalo(27) R2 ...5.10
Conshohocken,Pa. A3 ..5.15
Detroit M1 ...5.10
Ecorse,Mich. G5 ...5.10
Fairfield,Ala. T2 ...5.10
Farrell,Pa. S3 ...5.10
Fontana,Calif. K1 ...5.825
Gary,Ind. U5 ...5.10
Ind.Harbor,Ind. I-2, Y1..5.10
Johnstown,Pa.(25) B2 ..5.10
Lackaw'na,N.Y.(25) B2.5.10
LosAngeles(25) B3 ...5.85
LosAngeles C1 ...8.60
Minnequa,Colo. C10 ...6.20
Riverdale,Ill. A1 ...5.10
SanFrancisco S7 ...6.60
Seattle(25) B3 ...6.10
Seattle N14 ...6.60
Sharon,Pa. S3 ...5.10
S.Chicago,Ill. W14 ...5.10
S.SanFrancisco(25) B3 ..5.85
SparrowsPoint,Md. B2 ..5.10
Torrance,Calif. C11 ...5.85
Warren,O. R2 ...5.10
Weirton,W.Va. W6 ...5.10
Youngstown U5 ...5.10

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18 ...8.40
Farrell,Pa. S3 ...8.40
Gary,Ind. U5 ...8.40
Houston S5 ...8.65
Ind.Harbor,Ind. Y1 ...8.40
KansasCity,Mo. S5 ...8.65
LosAngeles B3 ...9.60
Lowellville,O. S3 ...8.40
Newport Ky. A2 ...8.40
Sharon,Pa. A2, S3 ...8.40
S.Chicago,Ill. W14 ...8.40
Youngstown U5, Y1 ...8.40

STRIP, Hot-Rolled High-Strength, Low-Alloy

Ashland,Ky. A10 ...7.575
Bessemer,Ala. T2 ...7.575
Conshohocken,Pa. A3 ..7.575
Ecorse,Mich. G5 ...7.575
Fairfield,Ala. T2 ...7.575
Farrell,Pa. S3 ...7.575
Gary,Ind. U5 ...7.575
Ind.Harbor,Ind. I-2, Y1 7.575
Lackawanna,N.Y. B2 ..7.575
LosAngeles(25) B3 ...8.325
Seattle(25) B3 ...8.575
Sharon,Pa. S3 ...7.575
S.Chicago,Ill. W14 ...7.575
S.SanFrancisco(25) B3.8.325
SparrowsPoint,Md. B2.7.575
Warren,O. R2 ...7.575
Weirton,W.Va. W6 ...7.575
Youngstown U5, Y1 ...7.575

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ...5.35
Warren,O. R2 ...5.875

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 ...7.425
Baltimore T6 ...7.425
Boston T6 ...7.975
Buffalo S40 ...7.425
Cleveland A7, J5 ...7.425
Dearborn,Mich. S3 ...7.425
Detroit D2, M1, P20...7.425
Dover,O. G6 ...7.425
Evanston,Ill. M22 ...7.525
Farrell,Pa. S3 ...7.425
Follansbee,W.Va. F4 ...7.425
Fontana,Calif. K1 ...9.20
FranklinPark,Ill. T6 ..7.525
Ind.Harbor,Ind. Y1 ...7.425
Indianapolis S41 ...7.575
LosAngeles C1, S41 ...9.30
McKeesport,Pa. E10 ...7.525
NewBedford,Mass. R10..7.875
NewBritain,Conn. S15..7.875
NewCastle,Pa. B4, E5..7.425
NewHaven,Conn. D2 ...7.875
NewKensington,Pa. A6..7.425
Pawtucket,R.I. R3 ...7.975
Pawtucket,R.I. N8 ...7.975
Philadelphia P24 ...7.875
Pittsburgh J5 ...7.425
Riverdale,Ill. A1 ...7.525
Rome,N.Y.(32) R6 ...7.425
Sharon Pa. S3 ...7.425
Trenton,N.J.(31) R5 ..8.875
Wallingford,Conn. W2..7.875
Warren,O. R2, T5 ...7.425
Worcester,Mass. A7 ...7.975

STRIP, Cold-Rolled Alloy

Boston T6 ...15.90
Carnegie,Pa. S18 ...15.55
Cleveland A7 ...15.55
Dover,O. G6 ...15.55
Farrell,Pa. S3 ...15.55
FranklinPark,Ill. T6 ..15.55
Harrison N.J. C18 ...15.55
Indianapolis S41 ...15.70
LosAngeles S41 ...17.75
Lowellville,O. S3 ...15.55
Pawtucket,R.I. N8 ...15.90
Riverdale Ill. A1 ...15.55
Sharon,Pa. S3 ...15.55
Worcester,Mass. A7 ...15.85
Youngstown S41 ...15.55

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7 ...10.80
Dearborn,Mich. S3 ...10.80
Dover,O. G6 ...10.80
Farrell,Pa. S3 ...10.80
Ind.Harbor,Ind. Y1 ...10.80
Sharon,Pa. S3 ...10.80
Warren,O. R2 ...10.80
Weirton,W.Va. W6 ...10.80
Youngstown Y1 ...10.80

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 ...8.175

STRIP, C. R. Electrogalvanized

Cleveland A7 ...7.425*
Dover,O. G6 ...7.425*
Evanston,Ill. M22 ...7.525*
McKeesport,Pa. E10 ...7.50*
Riverdale,Ill. A1 ...7.525*
Warren,O. B9, S3, T5..7.425*
Worcester,Mass. A7 ...7.975
Youngstown S41, Y1..7.425*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Farrell,Pa. S3 ...7.50
Sharon,Pa. S3 ...7.50

TIGHT COOPERAGE HOOP

Atlanta A11 ...5.65
Farrell,Pa. S3 ...5.525
Riverdale,Ill. A1 ...5.675
Sharon,Pa. S3 ...5.525
Youngstown U5 ...5.525

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	...	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. S3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Farrell Pa. S3	8.95	10.40	12.60	15.60	18.55
Fostoria,O. S1	10.05	10.40	12.60	15.60	....
FranklinPark,Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison N.J. C18	....	....	12.90	16.10	19.30
Indianapolis S41	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles S41	11.15	12.60	14.80	....	....
NewBritain,Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven,Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	9.85	10.40	12.60	15.60	....
NewYork W3	....	10.70	12.90	16.10	19.30
Pawtucket,R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	....	10.70	12.90	15.90	18.85
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown S41	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1	18.85	22.95	27.80
Buffalo W12	18.85	....	....
Fostoria,O. S1	19.05	22.15	....
FranklinPark,Ill. T6	19.20	23.30	28.15
Harrison,N.J. C18	18.85	22.95	27.80
NewYork W3	18.85	22.95	27.80
Palmer,Mass. W12	18.85	....	....
Trenton N.J. R5	18.85	22.95	27.80
Worcester,Mass. A7, T6	18.85	22.95	27.80
Youngstown S41	19.20	23.30	28.15

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$9.10	$9.35	$9.75
Fairfield,Ala. T2	9.20	9.45	9.85
Fairless,Pa. U5	9.20	9.45	9.85
Fontana,Calif. K1	9.75	10.00	10.40
Gary,Ind. U5	9.10	9.35	9.75
GraniteCity,Ill. G4	9.20	9.45	9.60
IndianaHarbor,Ind. I-2, Y1	9.10	9.35	9.75
Irvin,Pa. U5	9.10	9.35	9.75
Niles,O R2	9.10	9.35	9.75
Pittsburg,Calif. C11	9.75	10.00	10.40
SparrowsPoint,Md. B2	9.10	9.35	9.75
Weirton,W.Va. W6	9.10	9.35	9.75
Yorkville,O. W10	9.10	9.35	9.75

ELECTROLYTIC TIN-COATED SHEET (Dollars per lb)

IndianaHarbor,Ind. Y1 (20-27 Ga.)	7.90	....	....
Niles,O. R2 (20-27 Ga.)	7.90	8.10	8.30
Aliquippa,Pa. J5 (21-27 Ga.)	7.90	8.10	....

TIN PLATE, American	1.25 lb	1.50 lb
Aliquippa,Pa.J5	$10.40	$10.65
Fairfield,Ala. T2	10.50	10.75
Fairless,Pa. U5	10.50	10.75
Fontana,Calif.K1	11.05	11.30
Gary,Ind. U5	10.40	10.65
Ind.Harb. Y1	10.40	10.65
Pitts.,Calif. C11	11.05	11.30
Sp.Pt.,Md. B2	10.40	10.65
Weirton,W.Va.W6	10.40	10.65
Yorkville,O. W10	10.40	10.65

BLACK PLATE (Base Box)	
Aliquippa,Pa. J5	$8.20
Fairfield,Ala. T2	8.30
Fairless,Pa. U5	8.30
Fontana,Calif. K1	8.85
Gary,Ind. U5	8.20
GraniteCity,Ill. G4	8.30
Ind.Harbor,Ind. I-2, Y1	8.20
Irvin,Pa. U5	8.20
Niles,O. R2	8.20
Pittsburg,Calif. C11	8.85
SparrowsPoint,Md. B2	8.20
Weirton W.Va. W6	8.20
Yorkville,O. W10	8.20

HOLLOWARE ENAMELING Black Plate (29 Gage)

Aliquippa,Pa. J5	7.85
Gary,Ind. U5	7.85
GraniteCity,Ill. G4	7.95
Ind.Harbor,Ind. Y1	7.85
Irvin,Pa. U5	7.85
Yorkville,O. W10	7.85

MANUFACTURING TERNES (Special Coated, Base Box)

Gary,Ind. U5	$10.05
Irvin,Pa. U5	10.05

SILICON STEEL

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed 1½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom W.Va. W10	....	11.70	12.40	13.35	14.65
Brackenridge,Pa. A4	....	....	12.40	13.55	14.65
GraniteCity,Ill. G4	....	9.975*11.30*	12.00*	13.15*	....
IndianaHarbor,Ind. I-2	..	9.875*11.20*	11.90*	13.05*	....
Mansfield,O. E6	....	9.875*11.70	12.40	13.55	14.65
Newport,Ky. A2	....	9.875 11.70*	12.40*	13.55*	14.65*
Niles,O. M21	....	9.875*11.70	12.40	13.55	....
Vandergrift,Pa. U5	....	9.875*11.70	12.40	13.55	14.65
Warren,O. R2	....	9.875*11.70	12.40	13.55	14.65
Zanesville,O. A10	....	....	11.70†	12.40	13.55	14.65

	Stator
Vandergrift,Pa. U5	8.10
Mansfield,O. E6	8.10
Warren,O. R2 (Silicon Lowcore)	8.10

SHEETS (22 Ga., coils & cut lengths) Fully Processed (Semiprocessed 1½c lower)	T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	15.70	16.30	16.80	17.85
Vandergrift,Pa. U5	15.70	16.30	16.80	17.85
Zanesville,O. A10	15.70	16.30	16.80	17.85

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	....	18.10	19.70	20.20	20.70	15.70††
Butler,Pa. A10	....	....	19.70	20.20	20.70	....
Vandergrift,Pa. U5	..	17.10	18.10	19.70	20.20	20.70	15.70
Warren,O. R2	....	....	....	....	....	....	15.70‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed; semiprocessed ½c lower. ††Coils only.

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2 ..8.00
Aliquippa,Pa. J5 ...8.00
Alton,Ill. L1 ...8.20
Atlanta A1 ...8.00
Bartonville,Ill. K4 ...8.10
Buffalo W12 ...8.00
Chicago W13 ...8.00
Cleveland A7, C20 ...8.00
Crawfordsville,Ind. M8 8.10
Donora,Pa. A7 ...8.00
Duluth A7 ...8.00
Fairfield,Ala. T2 ...8.00
Fostoria,O.(24) S1 ...8.10
Houston S5 ...8.25
Jacksonville,Fla. M8 ...8.35
Johnstown,Pa. B2 ...8.00
Joliet,Ill. A7 ...8.00
KansasCity,Mo. S5 ...8.25
Kokomo,Ind. C16 ...8.10
LosAngeles B3 ...8.95
Minnequa,Colo. C10 ...8.25
Monessen,Pa. P7, P16 ...8.00
N.Tonawanda,N.Y. B11 ..8.00
Palmer,Mass. W12 ...8.30
Pittsburg,Calif. C11 ...8.95
Portsmouth,O. P12 ...8.00
Rankin,Pa. A7 ...8.00
S.Chicago,Ill. R2 ...8.00
S.SanFrancisco C10 ...8.95
SparrowsPoint,Md. B2 ..8.10
Sterling,Ill.(1) N15 ...8.00
Sterling,Ill. N15 ...8.10
Struthers,O. Y1 ...8.00
Waukegan,Ill. A7 ...8.00
Worcester,Mass. A7 ...8.30

WIRE, Cold Heading Carbon

Elyria,O. W8 ...8.00

WIRE, Gal'd., for ACSR

Bartonville,Ill. K4 ...12.65
Buffalo W12 ...13.40
Cleveland A7 ...12.65
Donora,Pa. A7 ...12.65
Duluth A7 ...12.65
Johnstown,Pa. B2 ...13.40
KansasCity,Mo. U3 ...12.90
Minnequa,Colo. C10 ..12.775
Monessen,Pa. P7, P16 ..12.65
Muncie,Ind. I-7 ...13.60
NewHaven,Conn. A7 ...12.95
Palmer,Mass. W12 ...13.70
Pittsburg,Calif. C11 ...13.45
Portsmouth,O. P12 ...12.65
Roebling,N.J. R5 ...12.95
SparrowsPt.,Md. B2 ...13.50
Struthers,O Y1 ...13.40
Trenton,N.J. A7 ...12.95
Waukegan,Ill. A7 ...12.65
Worcester,Mass. A7 ...12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5 ...9.75
Alton,Ill. L1 ...9.95
Buffalo W12 ...9.75
Cleveland A7 ...9.75
Donora,Pa. A7 ...9.75
Duluth A7 ...9.75
Johnstown,Pa. B2 ...9.75
KansasCity,Mo. S5, U3.10.00
LosAngeles B3 ...10.70
Minnequa,Colo. C10 ...9.95
Monessen,Pa. P7, P16 ...9.75
NewHaven,Conn. A7 ...10.05
Palmer,Mass. W12 ...10.05
Pittsburg,Calif. C11 ...10.70
Portsmouth,O. P12 ...9.75
Roebling,N.J. R5 ...10.05
S.Chicago,Ill. R2 ...9.75
S.SanFrancisco C10 ...10.70
SparrowsPt.,Md. B2 ...9.85
Struthers,O. Y1 ...9.75
Trenton,N.J. A7 ...10.05
Waukegan,Ill. A7 ...9.75
Worcester,Mass. A7 ...10.05

WIRE, MB Spring, High-Carbon

Aliquippa,Pa. J5 ...9.75
Alton,Ill. L1 ...9.95
Bartonville,Ill. K4 ...9.85
Buffalo W12 ...9.75
Cleveland A7 ...9.75
Donora,Pa. A7 ...9.75
Duluth A7 ...9.75
Fostoria,O. S1 ...9.80
Johnstown,Pa. B2 ...9.75
KansasCity,Mo. S5, U3.10.00
LosAngeles B3 ...10.70
Minnequa,Colo. C10 ...9.95
Monessen,Pa. P7, P16 ...9.75
Muncie Ind. I-7 ...9.95
Palmer,Mass. W12 ...10.05
Pittsburg,Calif. C11 ...10.70
Portsmouth,O. P12 ...9.75
Roebling,N.J. R5 ...10.05
S.Chicago,Ill. R2 ...9.75
S.SanFrancisco C10 ...10.70
SparrowsPt.,Md. B2 ...9.85
Struthers,O. Y1 ...9.75
Trenton,N.J. A7 ...10.05
Waukegan,Ill. A7 ...9.75
Wor'ster,Mass.A7,J4,T6 10.05

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1 ...16.50
Bartonville,Ill. K4 ...16.40
Chicago W13 ...16.30
Cleveland A7 ...16.30
Crawfordsville,Ind. M8.16.40
Fostoria,O. S1 ...16.30
Houston S5 ...16.55
Jacksonville,Fla. M8 ...16.65
Johnstown,Pa. B2 ...16.30
KansasCity,Mo. S5 ...16.55
Kokomo,Ind. C16 ...16.30
Minnequa,Colo. C10 ...16.55
Monessen,Pa. P16 ...16.30
Muncie Ind. I-7 ...16.50
Palmer Mass. W12 ...16.60
S.SanFrancisco C10 ...17.15
Waukegan,Ill. A7 ...16.30
Worcester,Mass. A7, J6.16.60

WIRE, Tire Bead

Bartonville,Ill. K4 ...17.15
Monessen,Pa. P16 ...17.15
Roebling,N.J. R5 ...17.65

ROPE WIRE	(A)
Bartonville,Ill. K4	13.45
Buffalo W12	13.45
Fostoria,O. S1	13.45
KansasCity,Mo. U3	13.70
Johnstown,Pa. B2	13.45
Monessen,Pa. P7	13.45
Muncie,Ind. I-7	13.65
Palmer,Mass. W12	13.75
Portsmouth,O. P12	13.45
Roebling,N.J. R5	13.75
St.Louis L8	13.45
SparrowsPt.,Md. B2	13.55
Struthers,O. Y1	13.45
Worcester,Mass. J4	13.75

(A) Plow and Mild Plow; add 0.25c for Improved Plow.

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	12.35
Baltimore T6	12.65
Boston T6	12.65
Buffalo W12	12.35
Chicago W13	12.45
Cleveland A7	12.35
Crawfordsville,Ind. M8	12.35
Dover,O. G6	12.35
Farrell,Pa. S3	12.35
Fostoria,O. S1	12.35
FranklinPark,Ill. T6	12.45
Kokomo,Ind. C16	12.35
Massillon,O R8	12.35
Milwaukee C23	12.55
Monessen,Pa. P7, P16,	12.35
Palmer,Mass. W12	12.65
Pawtucket,R. I. N8	11.95
Philadelphia P24	12.65
Riverdale,Ill. A1	12.45
Rome,N.Y. R6	12.35
Sharon,Pa. S3	12.35
Trenton,N.J. R5	12.65
Warren,O. B9	12.35
Worcester,Mass. A7,T6	12.65

NAILS, Stock

	Col.
AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. M8	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla. M8	175
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity, Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S. Chicago,Ill. R2	173
SparrowsPt. Md. B2	175
Sterling,Ill. (7) N15	175
Worcester,Mass. A7	179

(To Wholesalers; per cwt)

Galveston,Tex. D7 ..$10.30

NAILS, Cut (100 lb keg) To Distributors (33)

Wheeling,W.Va. W10 ..$10.10

POLISHED STAPLES

	Col.
AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	173
Atlanta A11	177
Bartonville,Ill. K4	175
Crawfordsville,Ind. M8	177
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	180
Jacksonville,Fla. M8	177
Johnstown,Pa. B2	175
Joliet,Ill A7	173
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	173
S.Chicago,Ill. R2	175
Sparrows Pt.,Md. B2	177
Sterling,Ill. (7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.)(per 97 lb Net Box) Coil No. 3150

AlabamaCity,Ala. R2	$9.24
Atlanta A11	10.36
Bartonville,Ill. K4	9.34
Buffalo W12	10.26
Chicago W13	9.24
Crawfordsville,Ind. M8	9.34
Donora,Pa. A7	9.24
Duluth A7	9.24
Fairfield,Ala. T2	9.24
Houston S5	10.51
Jacksonville,Fla. M8	9.34
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	9.24
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	9.34
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	9.94
S.Chicago, Ill. R2	9.24
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill. (37) N15	9.24

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	$9.54
Atlanta A11	10.70
Bartonville,Ill. K4	9.64
Buffalo W12	10.60
Chicago W13	9.54
Crawfordsville,Ind. M8	9.64
Donora,Pa. A7	9.54
Duluth A7	9.54
Fairfield,Ala. T2	9.54
Houston S5	10.85
Jacksonville,Fla. M8	9.64
Johnstown,Pa. B2	10.60
Joliet,Ill. A7	9.54
KansasCity,Mo. S5	10.85
Kokomo,Ind C16	9.64
LosAngeles B3	11.40
Minnequa,Colo. C10	10.85
Pittsburg,Calif. C11	10.26
S.Chicago,Ill. R2	9.54
S.SanFrancisco C10	11.40
SparrowsPt.,Md. B2	10.70
Sterling,Ill.(37) N15	9.54

Coil No. 6500 Interim

AlabamaCity,Ala. R2	$9.59
Atlanta A11	10.75
Bartonville,Ill. K4	9.69
Buffalo W12	10.65
Chicago W13	9.59
Crawfordsville,Ind. M8	9.69
Donora,Pa. A7	9.59
Duluth A7	9.59
Fairfield,Ala. T2	9.59
Houston S5	10.90
Jacksonville,Fla. M8	9.69
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	9.59
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	9.69
LosAngeles B3	11.45
Minnequa,Colo. C10	10.90
PittsburgCalif. C11	10.31
S.Chicago,Ill. R2	9.59
S.SanFrancisco C10	11.45
SparrowsPt.,Md. B2	10.75
Sterling,Ill.(37) N15	9.59

BALE TIES, Single loop

	Col.
AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. M8	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	217
Houston S5	214
Jacksonville,Fla. M8	212
Joliet,Ill. A7	217
KansasCity,Mo. S5	214
Kokomo,Ind. C16	217
Minnequa,Colo. C10	236
Pittsburg,Calif. C11	236
S.SanFrancisco C10	214
SparrowsPt.,Md. B2	214
Sterling,Ill.(7) N15	

FENCE POSTS

Birmingham C15	177
ChicagoHts.,Ill. C2, I-2	177
Duluth A7	177
Franklin,Pa. F5	177
Johnstown,Pa. B2	177
Marion,O. P11	177
Minnequa,Colo. C10	182
Tonawanda,N.Y. B12	177

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	193**
Aliquippa,Pa. J5	190§
Atlanta A11	198§
Bartonville,Ill. K4	198
Crawfordsville,Ind. M8	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston S5	198**
Jacksonville,Fla. M8	198
Johnstown,Pa. B2	196§
Joliet,Ill. A7	193†
KansasCity,Mo. S5	198**
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196§
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193**
S.SanFrancisco C10	213*
SparrowsPoint,Md. B2	198§
Sterling,Ill.(7) N15	198††

WOVEN FENCE, 9-15 Ga.

	Col.
Ala.City,Ala. R2	187**
Aliq'ppa,Pa.9-11½ga.J5	190§
Atlanta A11	192§
Bartonville,Ill. K4	192
Crawfordsville,Ind. M8	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston S5	192**
Jacksonville,Fla. M8	192
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill.(7) N15	192††

WIRE (16 gage)

	An'ld Galv. Stone	Galv Stone
Ala.City,Ala.R2	17.85	19.40**
Aliq'ppa,Pa. J5	..17.85	19.65
Bartonville K4	..17.95	19.80
Cleveland A7	..17.85	....
Craw'dville M8	17.95	19.80‡‡
Fostoria,O. S1	..18.35	19.90†
Houston S5	..18.10	19.65**
Jacksonville M8	17.95	19.80‡‡
Johnstown B2	..17.85	19.65§
Kan.City,Mo. S5	..18.10	....
Kokomo C16	..17.25	18.80†
Minnequa C10	..18.10	19.65**
P'lm'r,Mass.W12	18.15	19.70†
Pitts.,Calif. C11	..18.20	19.75†
S.SanFran. C10	..18.20	19.75**
St'ling(37) N15	..17.25	19.05††
SparrowsPt. B2	..17.95	19.75§
Waukegan A7	..17.85	19.40†
Worcester A7	....18.15	....

WIRE, Merchant Quality (6 to 8 gage) An'ld Galv.

Ala.City,Ala. R2	..9.00 9.55**
Aliquippa J5	....8.65 9.325§
Atlanta(48)A11	..9.10 9.775§
Bartonville(48) K4	..9.10 9.80
Buffalo W12	....9.00 9.55†
Cleveland A7	....9.00 ....
Crawfordsville M8	9.10 9.80‡‡
Donora,Pa. A7	....9.00 9.55†
Duluth A7	....9.00 9.55†
Fairfield T2	....9.00 9.55†
Houston(48) S5	..9.25 9.80**
Jack'ville,Fla. M8	9.10 9.80‡‡
Johnstown(48) B2	9.00 9.675§
Joliet,Ill. A7	....9.00 9.55†
Kans.City(48) S5	..9.25 9.80**
Kokomo(48) S16	..9.10 9.65†
LosAngeles B3	..9.95 10.625§
Monessen(48) P7	..8.65 9.35§
Palmer,Mass. W12	9.10 9.85†
Pitts.,Calif. C11	..9.95 10.50†
Rankin,Pa. A7	..9.00 9.55†
S.Chicago R2	..9.00 9.55**
S.SanFran. C10	..9.95 10.50**
Spar'wsPt.(48)B2	9.10 9.775§
St'ling(1)(48)N15	9.00 9.70§§
Struthers,O. Y1	..9.00 9.65†
Worcester,Mass.A7	9.30 9.85†

Based on zinc price of: *13.50. †5c. §10c. ‡Less than 10c. ††10.50c. ‡‡11.00c. **Subject to zinc equalization extras. §§11.50c.

FASTENERS

(Base discounts, shipments of one to four containers, per cent off list, f.o.b. mill)

BOLTS

Machine Bolts
Full Size Body (cut thread)
½ in. and smaller:
3 in. and shorter .. 55.0
3¼ in. thru 6 in. .. 50.0
Longer than 6 in. .. 37.0
⅝ in., 3 in. & shorter 47.0
3¼ in. thru 6 in. .. 40.0
Longer than 6 in. .. 31.0
⅝ in. thru 1 in.:
6 in. and shorter .. 37.0
Longer than 6 in. .. 31.0
1¼ in. and larger:
All lengths 31.0
Undersize Body (rolled thread)
½ in. and smaller:
3 in. and shorter .. 55.0
3¼ in. thru 6 in. .. 50.0

Carriage Bolts
Full Size Body (cut thread)& Undersize Body (rolled thread)
½ in. and smaller:
6 in. and shorter.. 48.0
Larger diameters and longer lengths .. 35.0

Lag, Plow, Tap, Blank Step, Elevator, Tire, and Fitting Up Bolts
½ in. and smaller:
6 in. and shorter .. 48.0
Larger diameters and longer lengths .. 35.0

High Tensile Structural Bolts
(Reg. semifinished hex head bolts, heavy semifinished hex nuts. Bolts — High-carbon steel, heat treated. Spec. ASTM A-325, in bulk. Full keg quantity)
⅝ in. diam 50.0
¾ in. diam 47.0
⅞ and 1 in. diam. 43.0
1⅛ and 1¼ in. diam 34.0

NUTS

(Keg or case quantity and over)

Square Nuts, Reg. & Heavy:
All sizes 56.0
(Full container)

Hex Nuts, Reg. & Heavy Hot Pressed & Cold Punched:
¾ in. and smaller.. 62.0
⅞ in. to 1½ in., incl. 56.0
1⅝ in. and larger .. 51.5

Hex Nuts, Semifinished, Heavy (Incl. Slotted):
¾ in. and smaller.. 62.0
⅞ in. to 1½ in. incl. 56.0
1⅝ in. and larger 51.5

Hex Nuts, Finished (Incl. Slotted and Castellated):
⅞ in. and smaller.. 65.0
1 in. to 1½ in., incl. 57.0
1⅝ in. and larger.. 51.5

Semifinished Hex Nuts, Reg. (Incl. Slotted):
⅝ in. and smaller.. 62.0
¾ in. to ⅞ in., incl. 65.0
1 in. to 1½ in., incl. 57.0
1⅝ in. and larger.. 51.5

CAP AND SETSCREWS
(Base discounts, packages, per cent off list, f.o.b. mill)

Hex Head Cap Screws, Coarse or Fine Thread, Bright:
6 in. and shorter:
⅝ in. and smaller.. 35.0
¾, ⅞, and 1 in. .. 16.0
Longer than 6 in.:
⅝ in. and smaller.. 3.0
¾, ⅞, and 1 in. ..+11.0

High Carbon, Heat Treated:
6 in. and shorter:
⅝ in. and smaller. 20.0
¾, ⅞, and 1 in. ..+ 5.0
Longer than 6 in.:
⅝ in. and smaller..+19.0
¾, ⅞, and 1 in. ..+39.0

Flat Head Cap Screws:
¾ in. and smaller, 6 in. and shorter ..+85.0

Setscrews, Square Head, Cup Point, Coarse Thread:
Through 1 in. diam:
6 in. and shorter ..+ 5.0
Longer than 6 in. ..+29.0

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.

Structural ½ in., larger 12.85, ⅞ in. and smaller by 6 in. and shorter: 15% off list.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	27.24	23.13
1¼	13	....	32.25	24.41
1½	13	30.42	35.65	26.98
1¾	13	35.94	42.12	31.89
2	13	40.28	47.21	35.74
2¼	13	45.36	53.17	40.26
2½	12	49.24	57.72	43.70
2¾	12	54.23	63.57	48.13
2¾	12	58.73	68.83	52.13
3	12	62.62	73.40	55.59

RAILWAY MATERIALS

Rails	Standard No. 1	Standard No. 2	Standard All No. 2	Tee Rails 60 lb Under
Bessemer,Pa. U5	5.75	5.65	....	6.725
Ensley,Ala. T2	5.75	5.65	....	6.725
Fairfield,Ala. T2	....	....	....	6.725
Gary,Ind. U5	5.75	5.65	....	....
Huntington,W.Va. C15	....	....	....	6.725
Johnstown,Pa. B2	....	....	....	(16)6.725
Lackawanna,N.Y. B2	5.75	5.65	....	6.725
Minnequa,Colo. C10	5.75	5.65	....	7.225
Steelton,Pa. B2	5.75	5.65	....	....
Williamsport,Pa. S19	....	....	....	6.725

TIE PLATES

Fairfield,Ala. T2	6.875
Gary,Ind. U5	6.875
Lackawanna,N.Y. B2	6.875
Minnequa,Colo. C10	6.875
Seattle B3	7.025
Steelton,Pa. B2	6.875
Torrance,Calif. C11	6.875

JOINT BARS

Bessemer,Pa. U5	7.25
Fairfield,Ala. T2	7.25
Joliet,Ill. U5	7.25
Lackawanna,N.Y. B2	7.25
Minnequa,Colo. C10	7.25
Steelton,Pa. B2	7.25

AXLES

Ind.Harbor,Ind. S13	9.125
Johnstown,Pa. B2	9.125

TRACK BOLTS, Untreated

Cleveland R2	15.35
KansasCity,Mo. S5	15.35
Lebanon,Pa. B2	15.35
Minnequa,Colo. C10	15.35
Pittsburgh S44	14.75
Seattle B3	15.85

SCREW SPIKES

Lebanon,Pa. B2	15.10

STANDARD TRACK SPIKES

Fairfield,Ala. T2	10.10
Ind.Harbor,Ind. I-2,Y1	10.10
KansasCity,Mo. S5	10.10
Lebanon,Pa. B2	10.10
Minnequa,Colo. C10	10.10
Pittsburgh J5	10.10
Seattle B3	10.60
S.Chicago,Ill. R2	10.10
Struthers,O. Y1	10.10
Youngstown R2	10.10

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, keg quantity.
(15) ⅝" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(21) New Haven, Conn., base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.05c, finer than 15 Ga.
(25) Bar mill bands.
(26) Deld. in mill zone, 6.295c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.375c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 13 Ga. & lighter; 60" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.635c.
(43) 9-14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3⅛ in. and smaller rounds; 9.65c, over 3½ in. and other shapes.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
Ambridge, Pa. N2	+12.25	....	+5.75	....	+3.25	....	+1.75	....	+1.75	....	+2	....	0.5	....
Lorain, O. N3	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
Youngstown Y1	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

ELECTRIC STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Alton, Ill. L1	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Benwood, W. Va. W10	1.5	+25	+10.5	+34	+21	+42.5	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Butler, Pa. F6	4.5	+22	+8.5	+32	+19.5	+41	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Fairless, Pa. N3	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Fontana, Calif. K1	....	....	....	....	....	....	+10.75	+26	+7.75	+22	+4.25	+17.5	+1.75	+16.75
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	1.25	+14	4.25	+10	7.75	+5.5	10.25	+6.25
Lorain, O. N3	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Sharon, Pa. S4	4.5	+22	+8.5	+32	+19.5	+41	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Sparrows Pt., Md. B2	2.5	+24	+10.5	+34	+21.5	+43	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Wheatland, Pa. W9	4.5	+22	+8.5	+32	+19.5	+41	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Youngstown R2, Y1	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.72		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Alton, Ill. L1	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Benwood, W. Va. W10	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Etna, Pa. N2	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Fairless, Pa. N3	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+5.5	1.25	+15.5	1.25	+15.5
Fontana, Calif. K1	+1.25	+15.75	+0.75	+15.25	0.75	+15.5	0.75	+15.5	+9.75	+26.5	+9.75	+26.5
Indiana Harbor, Ind. Y1	10.75	+3.75	11.25	+3.25	12.75	+3.5	12.25	+3.5	2.25	+14.5	2.25	+14.5
Lorain, O. N3	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+3.5	....	....	....	....
Sharon, Pa. M6	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Sparrows Pt., Md. B2	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Wheatland, Pa. W9	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Youngstown R2, Y1	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5

*Galvanized pipe discounts based on price of zinc at 11.00c, East St. Louis

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	Rerolling—Ingot	Rerolling—Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.75	25.00	....	36.00	....	43.50	39.25	48.50	45.00
202	24.75	28.25	37.75	39.00	42.25	44.50	40.00	49.25	49.25
301	24.00	26.00	38.75	37.25	43.50	46.00	41.25	51.25	47.50
302	26.25	29.50	39.50	40.50	44.25	46.75	42.25	52.00	52.00
302B	26.50	30.75	42.25	45.75	46.75	49.00	44.50	57.00	57.00
303	....	33.25	42.50	....	47.25	49.75	45.00	56.75	56.75
304	28.00	31.25	42.00	43.75	47.00	49.50	45.75	55.00	55.00
304L	....	....	49.75	51.50	54.75	57.25	53.50	62.75	62.75
305	29.50	34.75	44.00	47.50	47.00	49.50	46.25	58.75	58.75
308	32.00	36.25	49.00	50.25	54.75	57.75	55.25	63.00	63.00
309	41.25	47.50	60.00	64.50	66.25	69.50	66.00	80.50	80.50
310	51.50	59.50	81.00	84.25	89.75	94.50	87.75	96.75	96.75
314	....	....	80.50	....	89.75	94.50	87.75	....	104.25
316	41.25	47.50	64.50	68.50	71.25	75.75	71.75	80.75	80.75
316L	....	....	72.25	76.25	79.50	83.50	79.50	88.50	88.50
317	49.75	58.00	79.75	88.25	89.50	94.25	88.50	101.00	101.00
321	33.50	38.00	48.75	53.50	54.50	57.50	54.75	65.50	65.50
330	....	....	123.25	....	113.00	143.75	135.00	149.25	149.25
18-8 CbTa	38.50	48.25	57.75	63.50	63.75	67.25	64.75	79.25	79.25
403	....	....	29.25	....	33.25	35.00	30.00	40.25	40.25
405	20.25	26.50	30.75	36.00	34.75	36.50	32.50	46.75	46.75
410	17.50	19.50	29.25	31.00	33.25	35.00	30.00	40.25	40.25
416	....	....	29.75	....	33.75	35.50	31.25	48.25	48.25
420	....	31.50	35.50	41.75	40.75	42.75	40.25	62.00	62.00
430	17.75	19.75	29.75	32.00	33.75	35.50	31.00	40.75	40.75
430F	....	....	30.50	....	34.25	36.00	31.75	51.75	51.75
431	....	29.75	39.25	....	43.50	46.00	41.00	56.00	56.00
446	....	....	40.75	59.00	46.00	48.25	42.75	70.00	70.00

Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; Calstrip Steel Corp.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless & Strip Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co.; National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company, Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co.; Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steel Inc.; Union Steel Corp.; U. S. Steel Corp.; Universal Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel, subsidiary, Allegheny Ludlum Steel Corp.; Washington Steel Corp.; Seymour Mfg. Co.

Clad Steel

	Plates—Carbon Base 5%	Plates—Carbon Base 10%	Plates—Carbon Base 15%	Plates—Carbon Base 20%	Sheets Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	26.05	28.80	31.55	34.30	39.75
304L	30.50	33.75	36.95	40.15	....
316	38.20	42.20	46.25	50.25	58.25
316L	42.30	46.75	51.20	55.65	....
316 Cb	49.90	55.15	60.40	65.65	....
321	31.20	34.50	37.75	41.05	47.25
347	36.90	40.80	44.65	48.55	57.00
405	22.25	24.60	26.90	29.25	....
410	20.55	22.70	24.85	27.00	....
430	21.20	23.45	25.65	27.90	....
Inconel	48.90	59.55	70.15	80.85	....
Nickel	41.65	51.95	63.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....

	Strip, Carbon Base—Cold Rolled—10%	Strip, Carbon Base—Cold Rolled—Both Sides
Copper*	$36.20	$43.15

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Reg. Carbon (W-1)	0.330	V-Cr Hot Work (H-13)	0.550
Spec. Carbon (W-1)	0.385	W-Cr Hot Work (H-12)	0.530
Oil Hardening (O-1)	0.505	W Hot Wk. (H-21)	1.425-1.44
V-Cr Hot Work (H-11)	0.505	Hi-Carbon-Cr (D-11)	0.955

Grade by Analysis (%) W	Cr	V	Co	Mo	AISI Designation	$ per lb
18	4	1	....	....	T-1	1.840
18	4	2	....	....	T-2	2.005
13.5	4	3	....	....	T-3	2.105
18.25	4.25	1	4.75	....	T-4	2.545
18	4	2	9	....	T-5	2.915
20.25	4.25	1.6	12.95	....	T-6	4.330
13.75	3.75	2	5	....	T-8	2.485
1.5	4	1	....	8.5	M-1	1.200
6.4	4.5	1.9	....	5	M-2	1.345
6	4	3	....	6	M-3	1.590

Tool steel producers include: A4, A8, B2, B8, C4, C9, C12, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	62.00	62.50**	....	....
Birmingham U6	....	62.50**	66.50	....
Woodward,Ala. W15	62.00*	62.50**	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. R2	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon,Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland i2, A7	66.00	66.50	66.50	67.00
Akron,Ohio, deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro, Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	68.00	68.50	69.00	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
NewYork, deld.	....	75.50	76.00	....
Newark,N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
NevilleIsland,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa. deld.	....	67.60	67.60	68.13
Lawrenceville Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona Trafford,Pa. deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard,Ohio Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	....
Mansfield,Ohio, deld.	71.30	....	71.80	72.30
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva Utah C11	66.00	66.50	....	....
Granite City,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood,Tenn. T3	....	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

*Phos. 0.70-0.90%; Phos. 0.30-0.69% $63.
**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.
‡Phos.0.50% up; Phos. 0.30-0.49%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.01-6.50% silicon; add 75c for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% add $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity,Ky. P15	$99.00
NiagaraFalls,N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry, $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry, 12½ lb piglet, 16% Si, max fr'gt allowed up to $9. K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$73.00
Rockwood,Tenn. T3 (Phos. 0.035% max)	73.00
Troy,N.Y. R2 (Phos. 0.035% max)	73.00
Philadelphia, deld.	81.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075%)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Steel Service Center Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Galv. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Atlanta	8.59§	9.86§	10 13	....	8.91	9 39	13.24 #	....	9 40	9 29	11.21
Baltimore	8.55	9 25	9.99	....	9 05	9.45	11.85 #	15.48	9.55	9.00	10.50
Birmingham	8.18	9 45	10 46	....	8 51	8.99	....	....	9 00	8 89	10.90
Boston	10.07	11 12	11.92	53.50	12.17	10 19	13.30 #	15.64	10 64	10.27	11.95
Buffalo	8.40	9.60	10.85	55.98	8.75	9.15	11.45 #	15.40	9.25	9.20	10.75
Chattanooga	8.35	9 69	9 65	....	8.40	8.77	10 46	....	8 88	8 80	10 66
Chicago	8.25	9.45	10 90	53.00	8.51	8.99	9 15	15.05	9 00	8.89	10 20
Cincinnati	8.43	9.51	10.95	53.43	8.83	9.31	11.53 #	15.37	9 56	9 27	10.53
Cleveland	8.36	9.54	11.00	52.33	8.63	9.10	11.25 #	15.16	9.39	9.13	10.44
Dallas	8.80	9.30	....	....	8.85	8.80	....	....	8.75	9.15	10.40
Denver	9.40	11 84	12.94	....	9 43	9.80	11.19	....	9 84	9 76	11.08
Detroit	8.51	9.71	11.25	56.50	8.88	9.30	9.51	15.33	9.56	9.26	10.46
Erie, Pa.	8.35	9.45	9.95[10]	....	8.60	9.10	11.25	....	9.35	9.10	10.60
Houston	8.40	8.90	10.29	52.00	8.45	8.40	11.60	15.75	8.35	8.75	10.10
Jackson, Miss.	8.52	9.79	....	....	8.84	9.82	10.68	....	9.33	9.22	11.03
Los Angeles	8.70[2]	10.80[2]	12.20	57.60	9.15	9.10[2]	12.95[2]	16.35	9.00[2]	9.10[2]	11.30[2]
Memphis, Tenn.	8.59	9.80	....	....	8.84	9.32	11.25 #	....	9.33	9.22	10.86
Milwaukee	8.39	9.59	11.04	....	8.65	9.13	9.39	15.19	9 22	9.03	10.34
Moline, Ill.	8.55	9 80	....	....	8.84	8.95	9.15	....	8.99	8.91	....
New York	9.17	10.49	11.30	53.08	9.64	9.99	13.25 #	15.50	9.74	9 77	11.05
Norfolk, Va.	8.65	....	....	....	9.15	9.30	12.75	....	9.65	9.10	10.50
Philadelphia	8.20	9.25	10.61	52.71	9.25	9.40	11.95 #	15.48	9 10	9.15	10.40**
Pittsburgh	8.35	9.55	10.90	52.00	8.61	8.99	11.25 #	15.05	9.00	8.89	10.20
Richmond, Va.	8.65	....	10.79	....	9.15	9.55	....	....	9.65	9.10	10.60
St. Louis	8.63	9.83	11.28	....	8.89	9.37	9.78	15.43	9 48	9.27	10.58
St. Paul	8.79	10.04	11.49	....	8.84	9.21	9.86	....	9 38	9.30	10.49
San Francisco	9.65	11 10	11.40	55.10	9 75	10 15	13.60	16.25	9 85	10 00	12.35
Seattle	10 30	11.55	12.50	56.52	10 25	10.50	14.70	16.80[3]	10 20	10.10	12.50
South'ton, Conn.	9 07	10.33	10.71	....	9 48	9 74	....	....	9.57	9.57	10.91
Spokane	10.30	11.55	12.50	57.38	10.75	11.00	14.70	16.80	10.20	10.10	13.00
Washington	9.15	....	....	....	9.65	10.05	12.50	....	10.15	9.60	11.10

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **⅛ in. and heavier; ††as annealed; ‡‡¾ in. to 4 in. wide, inclusive; #net price. 1 in. round C-1018.

Base quantities 2000 to 4999 lb except as noted; cold-finished bars 2000 lb and over except in Seattle, 2000 to 3999 lb; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Seattle, 30,000 lb and over; [2]—30,000 lb; [3]—1000 to 4999 lb; [5]—1000 to 1999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000 pieces*)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchens, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur Winburne, Snow Shoe Pa., Bessemer, Ala., Farber Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill Stevens Pottery, Ga., Canon City, Colo., $140; Salina, Pa., $145; Niles, Ohio, $138; Cutler, Utah, $175.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $185; Stevens Pottery, Ga., $195; Cutler, Utah, $248.

Silica Brick (per 1000 pieces*)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., St. Louis, $158; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $163; E. Chicago, Ind., Joliet, Rockdale, Ill., $168; Canon City, Colo., $173; Lehi, Utah, $183; Los Angeles, $185.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $158; Morrisville, Hays, Latrobe, Pa., $163; E. Chicago, Ind., St. Louis, $168; Canon City, Colo., $183; Curtner, Calif., $185.

Semisilica Brick (per 1000 pieces*)

Woodbridge, N. J., Canon City, Colo., $140; Philadelphia, Clearfield, Pa., $145.

Ladle Brick (per 1000 pieces*)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000 pieces*)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., Danville, Ill., $253; Philadelphia, $265; Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $260.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $310; Danville, Ill., $313; Clearfield, Orviston, Snow Shoe, Pa., $320; Philadelphia, $325.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $350; Danville, Ill., $353 Clearfield, Orviston, Snow Shoe, Pa., $360; Philadelphia, $365.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., St. Louis, $188; Ottawa, Ill., $205.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, St. Charles, Pa., $234.

Dolomite (per net ton)

Domestic, dead burned, bulk, Billmeyer, Blue Bell Williams, Plymouth Meeting, York, Pa., Millville W. Va., Bettsville, Millersville, Martin, Woodville, Gibsonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.60.

Magnesite (per net ton)

Domestic, dead-burned, ⅛ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅜ in. grains with fines: Baltimore, $73.

*—9 in. x 4½ x 2.50 sts.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-$41; 70%, $36-$40; 60%, $33-$36.50. Imported, net ton, f.o.b. cars point of entry, duty paid, metallurgical grade; European, $30-$33 contract; Mexican, all rail, duty paid, $25; barge, Brownsville, Tex., $27.

Ores

Lake Superior Iron Ore

(Prices effective at start of the 1959 shipping season, subject to later revision, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 1, 1959, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, concentrates	nom.

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	21.00
Brazilian iron ore, 68.5%	22.60

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$12.50-13.00*
Domestic, concentrates f.o.b. milling points	16.00-17.00†

*Before duty. †Nominal.

Manganese Ore

Mn 46-48%, Indian 91.5c-96.5c, nom. per long ton unit, c.i.f. U. S. ports, duty for buyer's account.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian

48% 3:1	$42.00-44.00†
48% 2.8:1	38.00-40.00†
48% no ratio	29.00-31.00†

South African Transvaal

44% no ratio	19.75-21.00
48% no ratio	29.00-31.00

Turkish

48% 3:1	51.00-55.00†

Domestic

Rail nearest seller

18% 3:1	39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

50-55%	$2.25-2.40
60-65%	2.50-3.10

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

†Nominal.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Inches Diam	Inches Length	Per 100 lb
2	24	$64.00
2½	30	41.50
3	40	39.25
4	40	37.00
5½	40	36.50
6	60	33.25
7	60	29.75
8, 9, 10	60	29.50
12	72	28.25
14	60	28.25
16	72	27.25
17	60	27.25
18	72	27.00
20	72	26.50
24	84	27.25

CARBON

8	60	14.25
10	60	13.80
12	60	14.75
14	60	14.75
14	72	12.55
17	60	12.65
17	72	12.10
20	90	11.55
24	72, 84	11.95
24	96	12.10
30	84	12.00
35, 40	110	11.60
40	100	12.50

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, domestic and foreign, 98% Fe, min. trucklots, freight allowed east of Mississippi River:	
100 mesh, bags	11.25
100 mesh, pails	9.10‡
40 mesh, bags	8.10††
Electrolytic Iron,	
Melting stock, 99.87% Fe, irreg. fragments, ⅛ in. x 1.3 in.	28.75
1.3 in.	28.75
(In contract lots of 240 tons price is 22.75c)	
Annealed, 99.5% Fe	36.50
Unannealed (99+% Fe)	36.00
Unannealed (99+% Fe) (minus 325 mesh)	59.00
Powder, Flake (minus 16, plus 100 mesh)	29.00
Carbonyl Iron: 98.1-98.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.	
Aluminum: Atomized, 500-lb drum, freight allowed, cl. 38.50; ton lots 40.50.	
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	34.10-50.70†
Bronze, 5000-lb lots	52.20-56.20†
Copper, electrolytic	14.25*
Copper, reduced	14.25*
Lead	7.50*
Manganese, Electrolytic: Minus 50 mesh	43.00
Nickel	80.60
Nickel-Silver, 5000-lb lots	52.70-57.10†
Phosphor-Copper, 5000-lb lots	64.60
Copper (atomized) 5000-lb lots	45.10
Solder	7.00*
Stainless Steel, 304	$0.89
Stainless Steel, 316	$1.07
Tin	14.00*
Zinc, 5000-lb lots	19.00-32.20‡
Tungsten: Carbon reduced, 98.8% min., minus 65 mesh	Dollars nom.**
Chromium, electrolytic 99.8% Cr, min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §Cutting and scarfing grade. **Depending on price of ore. ††Welding grade.

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.25
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$30.35
Cincinnati, deld.	33.34
Buffalo, ovens	32.00
Detroit, ovens	32.00
Pontiac, Mich., deld.	33.95
Saginaw, Mich., deld.	35.53
Erie, Pa., ovens	32.00
Everett, Mass., ovens:	
New England, deld.	33.55*
Indianapolis, ovens	31.25
Ironton, Ohio, ovens	30.50
Cincinnati, deld.	33.54
Kearny, N. J., ovens	31.25
Milwaukee, ovens	32.00
Neville Island (Pittsburgh), Pa., ovens	30.75
Painesville, Ohio, ovens	32.00
Cleveland, deld.	34.19
Philadelphia, ovens	31.00
St. Louis, ovens	33.00
St. Paul, ovens	31.25
Chicago, deld.	34.73
Swedeland, Pa., ovens	31.00
Terre Haute, Ind., ovens	31.25

*Within $5.15 freight zone from works.

Imported Steel

(Base per 100 lb, landed, duty paid; based on current ocean rates with any rise for buyer's acc't. Source of shipment: Western Europe)

	North Atlantic	Great Lakes	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.80	$5.80	$5.75	$5.65	$6.11
Bar Size Angles	5.30	5.30	5.25	5.10	5.56
Structural Angles	5.68	5.68	5.63	5.53	5.98
I-Beams	5.31	5.31	5.31	5.21	5.65
Channels	5.26	5.26	5.26	5.16	5.60
Plates (basic bessemer)	5.65	5.65	5.60	5.50	5.96
Sheets, H.R.	8.30	8.30	8.30	8.10	8.60
Sheets, Galvanized, 20 Ga., 36 in. x 96 in.	9.52	9.52	9.47	9.37	9.83
Sheets, Galv. (in coils) 20 Ga., 48 in. wide	9.58	9.58	9.53	9.43	9.89
Sheets, C.R. (drawing quality)	8.75	8.75	8.75	8.60	9.12
Furring Channels, C.R., 1000 ft, ⅞ x 0.30 lb per ft	25.76	25.76	25.64	25.64	26.51
Barbed Wire (†)	6.68	6.68	6.58	6.52	6.75
Merchant Bars	5.90	5.90	5.85	5.65	6.11
Hot-Rolled Bands	7.15	7.15	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	5.70	5.70	5.70	5.50	5.85
Wire Rods, O.H. Cold Heading Quality No. 5.	6.30	6.30	6.30	6.20	6.55
Bright Common Wire Nails (§)	7.65	7.65	7.65	7.65	7.95

†Per 82 lb net reel. §Per 100-lb kegs, 20d nails and heavier.

Coal Chemicals

(Representative prices)

Cents per gal f.o.b. tank cars or tank trucks, plant.	
Pure benzene	31.00
Xylene, industrial grade	29.00
Creosote	24.00
Naphthalene, 78 deg	5.00
Toluene, one deg (del. east of Rockies)	25.00
Cents per lb, f.o.b. tank cars or tank trucks, deld.	
Phenol, 90 per cent grade	14.75
Per net ton bulk, f.o.b. cars or trucks, plant	
Ammonium sulfate, regular grade	$32.00

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa. 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx) base price per net ton, $245, Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-95%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn; packed, carload 26.8c, ton lot 28.4c, less ton 29.6c.

Electrolytic Manganese Metal: Min carload, bulk, 33.25c; 2000 lb to min carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi River; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk, 1.50% C grade, 18.5-21% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 16-18.5%, deduct 0.2c from above prices. For 3% grade, Si 12.5-16%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton to 300 lb, $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton to 300 lb $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract min c.l. $250 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi River and north of Baltimore and St. Louis. Spot $255.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4%). Contract, c.l. $300 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed. Spot, $305.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: C.l. lump, bulk, 28.75c per lb of contained Cr. Delivered.

Charge Chrome 1: Cr 63%, C 6% max, Si 7% max, 22c. Charge Chrome 2: Cr 50-59%, C 8% max, Si 6% max, 23c. Carload, lump, bulk, per lb Cr.

Refined Chrome 1: Cr 50-59%, C 5% max, Si 2% max, 25c. Refined Chrome 2: Si 12% max, 24c. Carload, lump, bulk, per lb Cr.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload, lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Delivered.

Cr 67-71%, carload, lump, bulk, 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max, 37.25c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%, Si 7-10%). C.l., 2" x D, bulk 30.8c per lb of contained Cr. Packed, c.l. 32.4c, ton 34.2c, less ton 35.7c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). 8M x D, carload bulk 20.05c per lb of alloy, caroad packed, 21.25c, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 28.25c per lb contained Cr, 14.60c per lb contained Si, 0.75" x down 29.40c per lb contained Cr, 14.60c per lb contained Si.

Chromium Metal, Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed, 2" x D plate (about ⅛" thick) $1.15 per lb, ton lot $1.17, less ton lot $1.19. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max, C 0.5% max) $3.30. **High Speed Grade:** (V 50-55% or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Carload, lump, bulk, 14.6c per lb contained Si. Packed, c.l. 17.1c, ton lot 18.55c, less ton 20.20c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Carload, lump, bulk, 15.75c per lb contained silicon. Packed, c.l. 17.75c, ton lot 19.55c, less ton 20.9c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Carload, lump, bulk, 16.9c per lb of contained Si. Packed, c.l. 18.8c, ton lot 20.45c, less ton 21.7c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Carload, lump, bulk, 20c per lb of contained Si. Packed, c.l. 21.65c, ton lot 23.05c, less ton 24.1c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 1.00% max Fe, 0.07% max Ca). C.l. lump, bulk, 21.5c per lb of Si. Packed, c.l. 23.15c, ton lot 24.45c, less ton 25.45c. Add 0.5c for max 0.03% Ca grade. Add 0.5c for 0.50% Fe grade analyzing 98.25% min Si.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.85c per lb of alloy; ton lot, packed, 10.85c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk, 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Carload bulk 26.25c per lb of alloy, carload, lump, packed 27.25c, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: 100 lb or more packed (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Carbortam: (B 1 to 2%). Lump, carload $320 per ton, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3¾ lb each and containing 2 lb of Cr). Carload, bulk 19.60c per lb of briquet, in bags 20.70c; 3000 lb to c.l. pallets 20.80c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Carload, bulk 14.5c per lb of briquet; c.l., packed, bags 16c; 3000 lb to c.l., pallets 16c; 2000 lb to c.l., bags 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). C.l. bulk 15.1c per lb of briquet; c.l. packed, bags 16.3c, 3000 lb to c.l., pallets 16.3c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si and small sizes, weighing approx 2½ lb and containing 1 lb of Si). Carload, bulk 8c per lb or briquet; packed, bags 9.2c; 3000 lb to c.l., pallets 9.6c; 2000 lb to c.l.; bags 10.8c; less ton 11.7c. Delivered. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.49 per lb of Mo contained, f.o.b. Langeloth, Pa.

Titanium Briquets: Ti 98.27%, $1 per lb, f.o.b. Niagara Falls, N. Y.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.1% max). Ton lots 2" x D, $3.45 per lb of contained Cb; less ton lots $3.50 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lots 2" x D, $3.05 per lb of contained Cb plus Ta, delivered; less ton lots $3.10.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Carlot bulk 19.25c per lb of alloy, c.l. packed ½ in. x 12 M 20.00c, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 20c per lb of alloy, ton lot 21.1oc; less ton lot 22.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.45c per lb of alloy; ton lot 19.95c; less ton lot 21.20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 19.25c. Packed c.l. 20.25c, 2000 lb to c.l. 21.25c; less than 2000 lb 21.75c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $5 for each 1% of P above or below the base). Carload, bulk, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $120 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo in 200-lb container, f.o.b. Langeloth and Washington, Pa., $1.76 in all sizes except powdered which is $1.82.

Technical Molybdic-Oxide: Per lb of contained Mo., in cans, $1.47; in bags, $1.46, f.o.b. Langeloth and Washington, Pa.

The Big Bite from Blaw-Knox... 680 cubic feet at one time

Custom-built at Blaw-Knox this huge clamshell bucket lifts enough coal in one bite to heat a seven room house located in a northern climate for a period of two years.

This four-rope, geared hinge, corner bar type clamshell is the largest of more than 400 varieties produced by Blaw-Knox that can be shipped completely assembled. Larger buckets must be delivered in sub-assemblies.

Capacity for any job has become a custom with Blaw-Knox. Every day, buckets designed and built at Blaw-Knox are performing profitably on the "tough" jobs all over the world.

A Blaw-Knox Bucket Engineer will be glad to help you select the bucket best suited to your operation. Contact him today or write for your copy of Blaw-Knox Bulletin number 2392.

BLAW-KNOX COMPANY

Blaw-Knox Equipment Division
Pittsburgh 38, Pennsylvania

BLAW-KNOX

If METALWORKING PLANTS ARE YOUR PROSPECTS...

✔ ✔ ✔

STEEL can put you in touch with the important ones, those that do more than 92% of the industry's business. Tell the buyers and specifiers in these plants of the machines or materials you have for sale through an "Equipment—Materials" advertisement. For rates write STEEL, Penton Building, Cleveland 13, O.

LOOKING FOR LARGE NUTS?

Then contact Acimet, your dependable source for large nuts, milled from the bar! A large stock of full and jam size nuts starting at 1½ inches are constantly maintained in all standards. Extremely high concentricity is maintained by means of the automatic screw machine method. Any thread size, right or left hand. Commercial steel, SAE 1045 and SAE 4140.

FREE LARGE NUT BUYERS GUIDE

Send for your copy of the Acimet large nut buyers guide. Contains complete specifications and prices on Acimet heavy semi-finished and new finished hex nuts milled from the bar.

ACIMET MFG. CO.

1446 ROCKWELL AVE. • CLEVELAND 14, OHIO • PRospect 1-5944

Scrap Displays Signs of Strength

STEEL's index on No. 1 heavy melting rises another $1 a ton to $36.50 despite threatened strike. Scrap use to increase as pig iron output is curtailed

Scrap Prices, Page 142

• **Pittsburgh**—Relatively little scrap is moving, but prices of several grades are up $1 or $2 a ton. Because of the strike threat, mills are specifying that shipments must reach them no later than June 26. Dealers are reluctant to sell for two reasons: 1. If there's no strike, they assume that steelmaking will continue at a fairly high level in July and that mills will need more scrap. 2. If there is a strike, they believe that steelmakers will reline many of their blast furnaces before resuming production. With hot metal output curtailed, they'll have to use more scrap.

• **Philadelphia**—Strong export demand has pushed up the market on No. 1 heavy melting steel to $38, delivered. No. 2 heavy melting is also higher at $32, delivered, as are No. 2 bundles at $24 and No. 1 busheling at $38. Short shoveling turnings also are up at $24-$25, heavy turnings at $33-$34, and couplers, springs, and wheels at $44.

• **New York** — Brokers' buying prices are unchanged. While domestic demand for steel scrap is easy, export business is sufficiently active to sustain the market. In other grades spot demand has little direct bearing, but domestic consumers are taking enough tonnage, especially in cast and stainless specialties, to keep prices on an even keel.

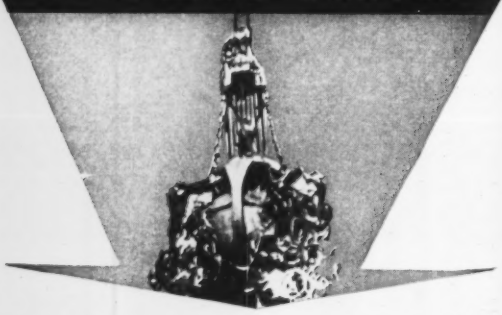
• **Chicago**—Activity in the scrap market is at a standstill and is expected to continue so until the steel industry's wage contract negotiations are resolved. Mills have stopped buying, and broker-dealer transactions have ceased. The price structure is stationary.

• **Cleveland** — Steelmakers have started to cut off scrap shipments, not wishing to get caught with unloaded cars on track in event of a strike. They don't want to pay unnecessary demurrage charges. Some mills set June 15 as a cutoff date; others took in scrap through June 20.

Despite the threatened strike, the market tone is a little stronger; some dealers and brokers feel that curtailed blast furnace operations will result in heavier use of scrap.

• **Detroit** — The market continues quiet as brokers and dealers await the outcome of the steel labor negotiations. Prices are a bit softer, but this is based mainly on dealer activity. About 20 or 25 cars of sheet clips supposedly were passed up by local brokers and finally purchased by a dealer at several dollars under current prices. Rail lists went a bit lower than industrial lists, which also indicates softness.

MATERIALS HANDLING
at its best with
OWEN GRAPPLES



OWEN'S exclusive, patented, independent tine action assures a more powerful grip . . . and larger loads . . . as each tine closes independently until the material is in the tremendous grasp of **all four tines.**

Write today for additional details

The OWEN BUCKET Co.
BREAKWATER AVENUE, CLEVELAND 2, OHIO
BRANCHES: New York • Philadelphia • Chicago
Berkeley, Calif. • Fort Lauderdale, Fla.

This "TAKE - UP" action of
Canton LOAD BINDERS

picks up slack and binds in one operation. The continuous action makes them a versatile tool in steel, lumber, machinery hauling . . . logging, oil fields, rigging. Design and heavy duty construction eliminate spread or release while in use. 360° swivel ends. 11 models by the Binder Specialists. . .

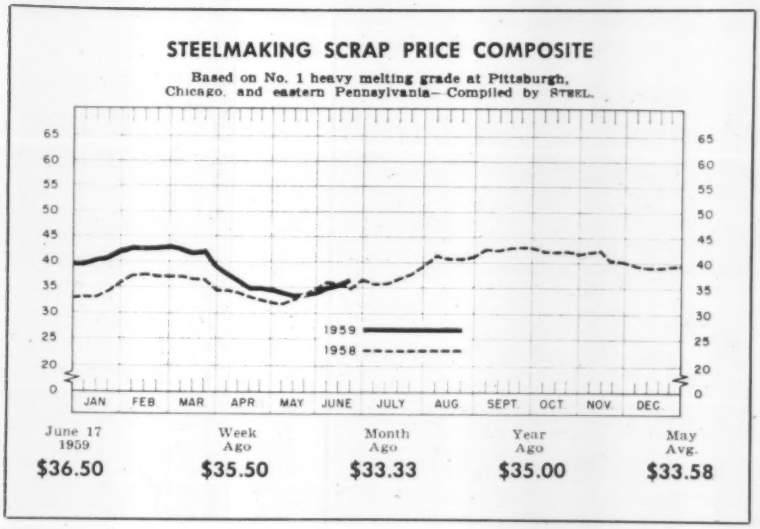
CANTON MANUFACTURING Co.
2420-13th St. NE. Canton 5, Ohio
Phone GLendale 3-3614

DYKEM STEEL BLUE
Stops Losses making Dies and Templates

Popular package is 8-oz. can fitted with Bakelite cap holding soft-hair brush for applying right at bench; metal surface ready for layout in a few minutes. The dark blue background makes the scribed lines show up in sharp relief, prevents metal glare. Increases efficiency and accuracy.

Write for sample on company letterhead

THE DYKEM COMPANY
2303H North 11th St. • St. Louis 6, Mo.



The Chrysler Corp. last week denied a published report that it had offered a Detroit mill 5000 to 6000 tons of No. 1 bundles for $41 and had been turned down.

• **Buffalo**—Cast scrap prices declined $2 to $3 a ton last week on small orders by foundries. The easiness is contrary to the recently developed strength in the steel mill grades, but cast prices, it's pointed out, had risen beyond their normal range from steel scrap quotations.

• **Cincinnati**—The market is quiet, and prices are firm. New strength in the industrial lists has encouraged dealers' hopes of an early advance. Shipments to most mills are being cut off in preparation for a strike July 1. One district mill is unaffected by the current labor negotiations.

• **St. Louis**—Prices are still firm but the market is quiet. Mills still take what is offered them but they are not pressing for material. Vacations are slowing the scrap movement. Plenty of scrap is available, but the market is more or less on dead center pending the outcome of steel labor negotiations.

• **Birmingham** — Recent price increases, and the approaching end of the steel labor contracts are causing a better flow of scrap. Still, dealers report scarcities of some items because of slower intake. Some consumers are reported buying outside the district, making special deals to get the grades they need. Exporters at some southern ports are reported paying $38 for No. 1 heavy melting, and $35 for No. 2 heavy melting.

• **Houston**—The Lone Star (Tex.) mill has contracted for limited tonnages of No. 1 and No. 2 heavy melting steel, and No. 2 bundles for shipment during the June 15-July 15 period, at prices unchanged from its previous order. The Houston mill remains out of the market, and will purchase no scrap until after the steel labor issue is resolved. The Lone Star mill will not be affected by a July 1 strike, its contract not expiring until Sept. 7.

Mexican demand for Texas scrap is strong. Orders are difficult to fill because of a slowdown in over-the-scale traffic. Some export buying has been reported in Beaumont, Lake Charles, and Houston.

Demand for cast scrap has eased. Two major East Texas consumers have withdrawn from the market, and Houston consumers continue to live off inventories.

• **Los Angeles** — Collections have slowed down, and yard inventories are declining, but prices are unchanged. The slackening is attributable to an expected cutoff of shipments by the mills as they get ready for a strike July 1.

• **San Francisco**—Exports are keeping the steel scrap market alive. Two cargoes a month are leaving this port for Japan. But even without this steady foreign demand, it's doubted if prices on the steel grades would fall much under present levels because of handling costs.

• **Seattle**—The market is awaiting developments on the steel labor front. Little material is moving, mills depending on their inventories. Foreign buyers are also postponing commitments until the domestic price trend is more clearly indicated.

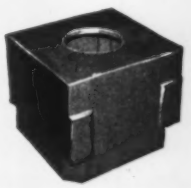
Daily Scrap Consumption In April Sets Record

Consumption of purchased ferrous scrap by domestic steel mills and foundries during April declined slightly from the March level, reports the Institute of Scrap Iron & Steel Inc. The total for the month was estimated at 2,740,000 gross tons vs. 2,839,000 in March and 2,323,000 in February. Consumption in the first four months this year was 9,990,000 tons vs. 6,156,258 in the like 1958 period.

Receipts of purchased scrap in April rose to 2,749,000 gross tons from the March total of 2,862,000.

Domestic consumption, both home and purchased scrap, during April declined from 6,677,000 tons in March to 6,638,000. Daily consumption, though, was at a record level of 221,000 tons. Steel mill consumption during the month was 5,308,000 tons, while foundry use was estimated at 1,330,000 tons.

(*Please turn to Page* 147)

COVERED HOT TOP BRICK
—INGOT MOLD PLUGS—

EUREKA
FIRE BRICK WORKS
MT. BRADDOCK, FAYETTE CO., PA.
DUNBAR, PA. BR-7-4213

Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, June 10, 1959. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

June 17	$36.50
June 10	35.50
May Avg.	33.58
June 1958	35.50
June 1954	27.92

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	*36.00-37.00*
No. 2 heavy melting	31.00-32.00
No. 1 dealer bundles	*40.00-41.00*
No. 2 bundles	25.00-26.00
No. 1 busheling	*40.00-41.00*
No. 1 factory bundles	*46.00-47.00*
Machine shop turnings	*20.00-21.00*
Mixed borings, turnings	*20.00-21.00*
Short shovel turnings	*26.00-27.00*
Cast iron borings	*26.00-27.00*
Cut structurals:	
2 ft and under	43.00-44.00
3 ft lengths	42.00-43.00
Heavy turnings	30.00-31.00
Punchings & plate scrap	45.00-46.00
Electric furnace bundles	42.00-43.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Stove plate	45.00-46.00
Unstripped motor blocks	32.00-33.00
Clean auto cast	46.00-47.00
Drop broken machinery	51.00-52.00

Railroad Scrap

No. 1 R.R. heavy melt.	44.00-45.00
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	57.00-58.00
Random rails	51.00-52.00
Angles, splice bars	50.00-51.00
Railroad specialties	50.00-51.00
Rails, rerolling	61.00-62.00

Stainless Steel Scrap

18-8 bundles & solids	220.00-225.00
18-8 turnings	115.00-120.00
430 bundles & solids	120.00-125.00
430 turnings	55.00-65.00

CHICAGO

No. 1 hvy melt., indus.	35.00-36.00
No. 1 hvy melt., dealer	34.00-35.00
No. 2 heavy melting	31.00-32.00
No. 1 factory bundles	41.00-42.00
No. 1 dealer bundles	35.00-36.00
No. 2 bundles	24.00-25.00
No. 1 busheling, indus.	35.00-36.00
No. 1 busheling, dealer	*34.00-35.00*
Machine shop turnings	17.00-18.00
Mixed borings, turnings	19.00-20.00
Short shovel turnings	19.00-20.00
Cast iron borings	19.00-20.00
Cut structurals, 3 ft	43.00-44.00
Punchings & plate scrap	44.00-45.00

Cast Iron Grades

No. 1 cupola	50.00-51.00
Stove plate	47.00-48.00
Unstripped motor blocks	42.00-43.00
Clean auto cast	57.00-58.00
Drop broken machinery	57.00-58.00

Railroad Scrap

No. 1 R.R. heavy melt.	39.00-40.00
R.R. malleable	59.00-60.00
Rails, 2 ft and under	55.00-56.00
Rails, 18 in. and under	56.00-57.00
Angles, splice bars	48.00-49.00
Axles	65.00-66.00
Rails, rerolling	58.00-59.00

Stainless Steel Scrap

18-8 bundles & solids	215.00-220.00
18-8 turnings	115.00-120.00
430 bundles & solids	115.00-120.00
430 turnings	55.00-60.00

YOUNGSTOWN

No. 1 heavy melting	39.00-40.00
No. 2 heavy melting	28.00-29.00
No. 1 busheling	39.00-40.00
No. 1 bundles	39.00-40.00
No. 2 bundles	25.00-26.00
Machine shop turnings	17.00-18.00
Short shovel turnings	22.00-23.00
Cast iron borings	22.00-23.00
Low phos.	42.00-43.00
Electric furnace bundles	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt.	38.00-39.00

CLEVELAND

No. 1 heavy melting	36.00-37.00
No. 2 heavy melting	25.00-26.00
No. 1 factory bundles	41.00-42.00
No. 1 bundles	36.00-37.00
No. 2 bundles	25.00-26.00
No. 1 busheling	36.00-37.00
Machine shop turnings	14.00-15.00
Short shovel turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Cast iron borings	20.00-21.00
Cut foundry steel	39.00-40.00
Cut structurals, plates 2 ft and under	*45.00-46.00*
Low phos. punchings & plate	39.00-40.00
Alloy free, short shovel turnings	22.00-23.00
Electric furnace bundles	39.00-40.00

Cast Iron Grades

No. 1 cupola	47.00-48.00
Charging box cast	38.00-39.00
Heavy breakable cast	38.00-39.00
Stove plate	44.00-45.00
Unstripped motor blocks	33.00-34.00
Brake shoes	36.00-37.00
Clean auto cast	50.00-51.00
Burnt cast	37.00-38.00
Drop broken machinery	50.00-51.00

Railroad Scrap

R.R. malleable	65.00-66.00
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Rails, random lengths	52.00-53.00
Cast steel	46.00-47.00
Railroad specialties	48.00-49.00
Uncut tires	42.00-43.00
Angles, splice bars	51.00-52.00
Rails, rerolling	58.00-59.00

Stainless Steel
(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	215.00-220.00
18-8 turnings	110.00-115.00
430 clips, bundles, solids	125.00-130.00
430 turnings	45.00-55.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	33.00
No. 2 heavy melting	31.00
No. 1 bundles	37.00
No. 2 bundles	21.00
No. 1 busheling	37.00
Machine shop turnings	14.00
Short shovel turnings	16.00

Cast Iron Grades

No. 1 cupola	50.00
Charging box cast	42.00
Heavy breakable cast	40.00
Unstripped motor blocks	41.00
Clean auto cast	51.00
Stove plate	46.00

Railroad Scrap

No. 1 R.R. heavy melt	38.00
Rails, 18 in. and under	49.00
Rails, random lengths	42.50
Rails, rerolling	54.50
Angles, splice bars	45.00

BIRMINGHAM

No. 1 heavy melting	*32.50-33.50*
No. 2 heavy melting	*25.00-26.00*
No. 1 bundles	*36.00-37.00*
No. 2 bundles	*22.00-23.00*
No. 1 busheling	*36.00-37.00*
Cast iron borings	14.00-15.00
Machine shop turnings	22.00-23.00
Short shovel turnings	*26.00-27.00*
Bar crops and plates	42.00-43.00
Structurals & plates	41.00-42.00
Electric furnace bundles	36.00-37.00
Electric furnace:	
3 ft and under	34.00-35.00
2 ft and under	35.00-36.00

Cast Iron Grades

No. 1 cupola	53.00-54.00
Stove plate	53.00-54.00
Charging box cast	29.00-30.00
Unstripped motor blocks	40.00-41.00
No. 1 wheels	40.00-41.00

Railroad Scrap

No. 1 R.R. heavy melt.	34.00-35.00
Rails, 18 in. and under	*48.00-49.00*
Rails, rerolling	*54.00-55.00*
Rails, random lengths	40.00-41.00
Angles, splice bars	43.00-44.00

PHILADELPHIA

No. 1 heavy melting	*38.00*
No. 2 heavy melting	*32.00*
No. 1 bundles	38.00
No. 2 bundles	*24.00*
No. 1 busheling	*38.00*
Electric furnace bundles	39.00
Mixed borings, turnings	20.00†
Short shovel turnings	*24.00-25.00*
Machine shop turnings	20.00
Heavy turnings	*33.00-34.00*
Structurals & plate	40.00-42.00
Couplers, springs, wheels	*44.00*
Rail crops, 2 ft & under	58.00-60.00

Cast Iron Grades

No. 1 cupola	41.00
Heavy breakable cast	42.00
Drop broken machinery	49.00-50.00
Malleable	67.00-68.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	28.00-29.00
No. 2 heavy melting	25.00-26.00
No. 1 bundles	28.00-29.00
No. 2 bundles	16.00-17.00
Machine shop turnings	9.00-10.00†
Mixed borings, turnings	12.00-13.00
Short shovel turnings	13.00-14.00
Low phos. (structurals & plates)	36.00-37.00

Cast Iron Grades

No. 1 cupola	36.00-37.00
Unstripped motor blocks	24.00-25.00
Heavy breakable	34.00-35.00

Stainless Steel

18-8 sheets, clips, solids	195.00-200.00
18-8 borings, turnings	85.00-90.00
410 sheets, clips, solids	55.00-60.00
430 sheets, clips, solids	85.00-90.00

BUFFALO

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	28.00-29.00
No. 1 bundles	33.00-34.00
No. 2 bundles	23.00-24.00
No. 1 busheling	33.00-34.00
Short shovel turnings	21.00-22.00
Machine shop turnings	17.00-18.00
Cast iron borings	19.00-20.00
Low phos structurals and plate, 2 ft and under	43.00-44.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	*42.00-43.00*
No. 1 machinery	*46.00-47.00*

Railroad Scrap

Rails, random lengths	45.00-46.00
Rails, 3 ft and under	51.00-52.00
Railroad specialties	43.00-44.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	33.50-34.50
No. 2 heavy melting	28.50-29.50
No. 1 bundles	33.50-34.50
No. 2 bundles	23.00-24.00
No. 1 busheling	33.50-34.50
Machine shop turnings	17.00-18.00
Mixed borings, turnings	17.00-18.00
Short shovel turnings	19.00-20.00
Cast iron borings	18.00-19.00
Low phos., 18 in.	43.00-44.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Heavy breakable cast	*41.00-42.00*
Charging box cast	39.00-40.00
Drop broken machinery	*51.00-52.00*

Railroad Scrap

No. 1 R.R. heavy melt.	38.00-39.00
Rails, 18 in. and under	55.00-56.00
Rails, random lengths	47.00-48.00

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	34.00
No. 2 heavy melting	31.00
No. 1 bundles	34.00
No. 2 bundles	21.00
Machine shop turnings	17.00
Short shovel turnings	20.00
Low phos. plates & structurals	41.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Heavy breakable	27.00-28.00†
Foundry malleable	41.00-42.00
Unstripped motor blocks	38.00-38.50

Railroad Scrap

No. 1 R.R. heavy melt.	34.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	26.00
No. 2 heavy melting	20.00-20.50
No. 1 bundles	26.00
No. 1 busheling	26.00
Machine shop turnings	8.00-9.00
Short shovel turnings	11.00-12.00
No. 1 cast	33.00
Mixed cupola cast	33.00
No. 1 machinery cast	34.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	31.00-32.00
No. 2 heavy melting	20.00-21.00
No. 1 bundles	33.00-34.00
No. 2 bundles	19.00-20.00
No. 1 busheling	31.00-32.00
Machine shop turnings	12.00-13.00
Mixed borings, turnings	13.00-14.00
Short shovel turnings	13.00-14.00

Cast Iron Grades

No. 1 cupola	46.00-47.00
Stove plate	35.00-36.00
Charging box cast	36.00-37.00
Heavy breakable	36.00-37.00
Unstripped motor blocks	24.00-25.00
Clean auto cast	50.00-51.00

SEATTLE

No. 1 heavy melting	35.00
No. 2 heavy melting	33.00
No. 1 bundles	27.00†
No. 2 bundles	22.00
Machine shop turnings	17.00
Mixed borings, turnings	17.00
Electric furnace No. 1	38.00†

Cast Iron Grades

No. 1 cupola	34.00
Heavy breakable cast	28.00†
Unstripped motor blocks	26.00
Stove plate (f.o.b. plant)	21.00†

LOS ANGELES

No. 1 heavy melting	38.00
No. 2 heavy melting	36.00
No. 1 bundles	35.00
No. 2 bundles	18.00
Machine shop turnings	17.00
Shoveling turnings	19.00
Cast iron borings	19.00
Cut structurals and plate 1 ft and under	49.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	47.00

Railroad Scrap

No. 1 R.R. heavy melt.	41.00

SAN FRANCISCO

No. 1 heavy melting	36.00
No. 2 heavy melting	33.00
No. 1 bundles	33.00
No. 2 bundles	22.00
Machine shop turnings	16.00
Mixed borings, turnings	16.00
Cast iron borings	16.00
Heavy turnings	16.00
Short shovel turnings	16.00
Cut structurals, 3 ft	42.00

Cast Iron Grades

No. 1 cupola	44.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

(Brokers' buying prices)

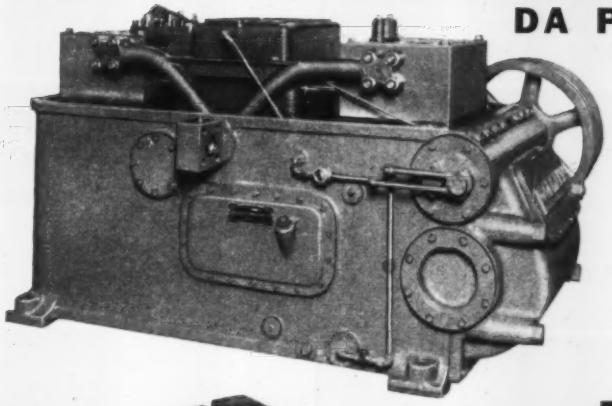
No. 1 heavy melting	32.25
No. 2 heavy melting	28.25
No. 1 bundles	32.25
No. 2 bundles	22.75
Mixed steel scrap	24.25
Mixed borings, turnings	13.00
Busheling, new factory: Prepared	32.25
Unprepared	26.25
Short steel turnings	17.00

Cast Iron Grades‡

No. 1 machinery cast	46.50-48.00

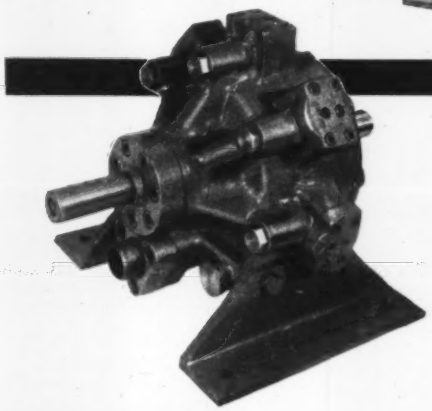
†Nominal.
‡F.o.b. Hamilton, Ont.

LOGEMANN HIGH PRESSURE PUMPS



DA PUMPS . . . *Opposed cylinder, Reciprocating-plunger, double pressure type.*

Logemann DA Pumps are close-coupled to occupy minimum floor space. They have six plungers, operating three each in two cylinder blocks. In double pressure applications both cylinders deliver large fluid volume to a common discharge line, up to a predetermined low pressure. The low pressure cylinder is then automatically cut out by an adjustable unloading valve and high pressure cylinder continues to deliver fluid until maximum pressure is reached. Pumps are equipped with anti-friction bearings and automatically lubricated by combination splash and pressure system fed by a lubricating pump. Are totally enclosed, with cover provided for inspection and maintenance. Drive is through multiple V-belts for quietness. Available in various sizes.



RA PUMPS

84 GPM for pressures up to 1500 psi
42 GPM for pressures up to 3000 psi

These are radial rotary plunger type pumps with hydraulically operated suction and discharge valves. Both are totally enclosed and extremely compact for limited space conditions. Seven plungers. Cylinder, plungers and valves are Nitralloy. Crankshaft rotates on tapered roller bearings and is counterweighted to minimize vibration. Drive from motor is through flexible coupling.

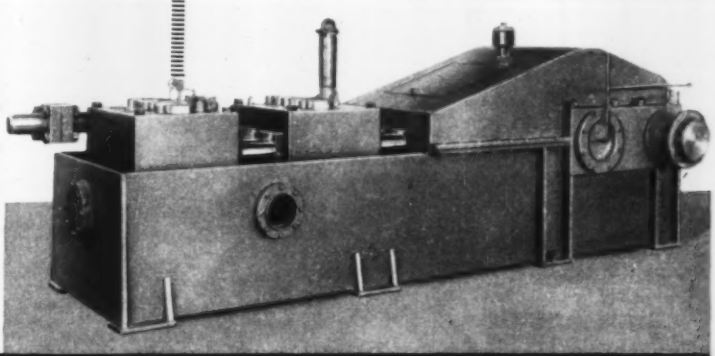
14-AX High Pressure Test PUMP

This is a vertical triplex type for pressures as high as 50,000 psi. —and is extensively used on pressure and burst tests. Short plunger stroke and low crankshaft speed reduces fluid delivery for easy observation of gauges and control during pressure tests. Designed for use with water, has non-corrosive cylinder block, and the plungers, valves and valve seats are Nitralloy. This type is also obtainable for lower pressures and for other applications such as press operation.

145-A PUMP

Horizontal triplex tandem type

Designed to deliver high gallonage (371 GPM) at pressures up to 1000 psi and reduced gallonage (128 GPM) between 1000 and 3000 psi. Changeover from low to high pressure is made by an automatic unloading valve. Crankshaft, connecting rods and drive are enclosed in an oil-tight, dust-proof cover. Gears are continuously sprayed with oil under pressure; connecting rod bearings are pressure lubricated; and crosshead slides operate in an oil bath. The lubricating oil is pump circulated, and all cylinders are machined from solid steel blocks. This tandem type is also obtainable in smaller sizes.



LOGEMANN BROTHERS CO.

3126 W. BURLEIGH STREET • MILWAUKEE 45, WISCONSIN

Lead, Zinc Aided by Quotas

They may not be the final answer to the lead and zinc problem, but they've worked out better than most people predicted. Copper market eases. Aluminum output up

Nonferrous Metal Prices, Pages 146 & 147

WHEN quotas limiting the amount of foreign origin lead and zinc that can be imported into the U. S. went into effect last October, metalmen were skeptical. Many had favored tariffs, and they were bitterly disappointed with the administration's substitute program because they felt it wouldn't be strong enough to do domestic producers any good.

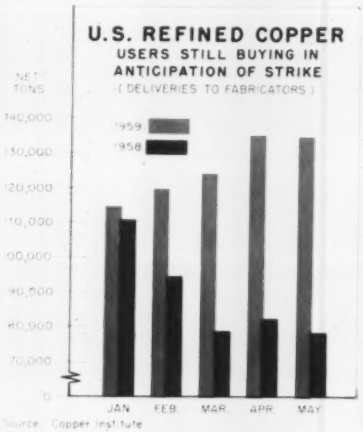
• **Effects** — After nearly eight months of operation, the program's effectiveness can be summed up in two words: It's working! One indication is producers' stocks. At the end of April, lead stocks were down to 247,765 tons, lower than they were in December. In May, zinc stocks fell to 196,004 tons. Except for the large tonnage held in stocks, supply and demand in the U. S. are pretty much in balance.

The program has cut imports sharply. For example, during the first four months of this year, 60,440 less tons of lead entered the U. S. than in the same period of 1958. Less metal on the market and a business upswing have firmed prices. In fact, if it weren't for the threat of a steel strike, the price of zinc would be higher.

• **More Improvement** — It's not unanimous, but many metalmen think the full effect of quotas hasn't been felt yet. They believe as the year progresses that producers, not hampered by a flood of imports, will be able to chip away at their bulky stocks.

• **Tariff Not Buried**—This doesn't mean the industry is entirely satisfied with quotas. Most domestic producers candidly admit they think tariffs would be a better solution. Their reasoning: 1. Even with quotas, too much lead and zinc are entering the U. S. 2. Since foreign producers can still go under domestic quotations, many high cost mines find it difficult to sell their metal at the going rate and make a profit.

The viewpoint is shared by most mine state legislators. A host of bills have been presented in the last year to place duties on lead and zinc imports. The latest try is by Sen. James E. Murray (D., Mont.). His plan: A 4-cent-a-pound duty to be placed on imports whenever the domestic price of lead falls below 15.5 cents a pound and the price of zinc goes below 13.5 cents.



• **Sales Ease**—The growing strike tension has made buyers fidgety. June sales should hold close to the high May figures but will probably drop a little in July. One exception is special high grade zinc which is booming. It's in generally tight supply, and many buyers haven't been able to get all they want.

Copper Market Eases

Buyers have evidently decided they don't want to add any more copper to inventory now and are willing to coast for a while. As a result, the tightness in the copper market has about disappeared.

• **Custom Price Down** — Custom smelters reacted to a decline in demand and falling quotations on the London Metal Exchange and Commodity Exchange by dropping their price 0.5 cent to 31.5 cents a pound on June 15. As STEEL went to press, metalmen said the odds were about 50-50 it would drop a little more.

Some world-wide weakness is caused by excess production in relation to demand. Evidently more foreign metal has been entering the U. S. recently. Some dealers in New York last week were quoting 31 cents a pound for foreign copper.

Aluminum Output Up

U. S. primary output continues to spiral. With the startup of 42,000 tons of idle capacity at Jones Mill, Ark., and Listerhill, Ala., Reynolds Metals Co. is operating at full capacity (601,000 tons yearly). Anaconda Aluminum Co. has stepped up its operations to 88 per cent of capacity. On the basis of these announcements, STEEL estimates the domestic industry is now operating at an annual rate of 2,057,500 tons.

NONFERROUS PRICE RECORD

	June 17 Price	Last Change		Previous Price	May Avg	Apr. Avg	June, 1958 Avg
Aluminum	24.70	Aug.	1, 1958	24.00	24.700	24.700	24.000
Copper	31.50	June	15, 1959	31.50-32.00	31.750	32.404	25.400
Lead	11.80	May	7, 1959	11.30	11.700	10.992	11.040
Magnesium	35.25	Aug.	13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec.	6, 1956	64.50	74.000	74.000	74.000
Tin	104.75	June	17, 1959	104.625	103.080	102.490	94.701
Zinc	11.00	Feb.	25, 1959	11.50	11.000	11.000	10.000

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig 99.8%, Velasco, Tex.

BULLARD

"H.B.M., Model 75 is better than any other machine we've ever seen."

This statement by Mr. John Gruber, Plant Foreman of George Hantscho and Company, Inc., Mount Vernon, New York, manufacturers of printing equipment, sums up their experience since installing the Bullard 4" H.B.M., Model 75, in June 1957.

He further states "our presses and paperfolding machines are made to order and each job varies from the one before it. Because of this, we can't use assembly line or mass production techniques."

"The only mass production we have is the machining of holes in cast iron, up to as many as 105 in a side frame. Since we've been using our Bullard H.B.M., Model 75, with BULLARD AUTOMATIC POSITIONING we have not spoiled a single piece due to the malfunctioning of the machine."

Do you know the full story on the Bullard H.B.M., Model 75? If not, it will pay you to call your nearest Bullard Sales Engineer — he'll be glad to give you all the details or write

THE BULLARD COMPANY BRIDGEPORT 9, CONN.

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 24.70; ingots, 26.80, 30,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 28.60; No. 43, 28.40; No. 195, 29.40; No. 214, 30.20; No. 356, 28.60; 30 or 40 lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 24.50-25.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.75% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.30 per lb deld.

Cobalt: 97.99%, $1.75 per lb for 500-lb keg, $1.77 per lb for 100 lb case; $1.82 per lb under 100 lb.

Columbium: Powder, $55-85 per lb, nom.

Copper: Electrolytic, 31.50 deld.; custom smelters, 31.50; lake, 31.50 deld.; fire refined, 31.25 deld.

Germanium: First reduction, less than 1 kg, 41.00 per gram; 1-10 kg, 37.00 per gram; intrinsic grade, 33.30-35.30 per gram.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $75-80 nom. per troy oz.

Lead: Common, 11.80; chemical, 11.90; corroding, 11.90, St. Louis, New York basis, add 0.20.

Lithium: 1 lb or 2 lb ingots, less than 50 lb, $11 per lb, f.o.b. Minneapolis; 50-99 lb, $10; 100-499 lb, $9.50; 500 lb or more, $9 per lb, delivered.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $241-243 per 76 lb flask.

Molybdenum: Unalloyed, turned extrusion, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. points of entry, contained nickel, 69.60.

Osmium: $70-100 per troy oz nom.

Palladium: $18-20 per troy oz.

Platinum: $77-80 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $122-125 per troy oz.

Ruthenium: $55-60 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market, 91.375 per troy oz.

Sodium: Solid pack, c.l., 19.50; l.c.l., 20.00; brick, c.l., 21.00; l.c.l., 21.50; tank car, 17.00.

Tantalum: Melting stock, $35 per lb; rod, $60 per lb nom.; sheet, $55 per lb nom.

Tellurium: $2.00-2.20 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot and prompt, 104.75.

Titanium: Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), $1.62-1.82; grade A-2 (0.5% Fe max.), $1.70 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000-lb lots, $2.75-2.90 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, $3.30-3.80.

Zinc: Prime western, 11.00; brass special, 11.25; intermediate, 11.50, East St. Louis, freight allowed over 0.50 per lb, New York basis, add 0.50. High grade, 12.00; special high grade, 12.25 deld. Diecasting alloy ingot No. 3, 14.00; No. 2, 14.50; No. 5, 14.25 deld.

Zirconium: Reactor grade sponge, 100 lb or less, $7 per lb; 100-500 lb, $6.50 per lb; over 500 lb, $6 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 24.875-26.25; No. 12 foundry alloy (No. 2 grade), 22.75-23.00; 5% silicon alloy, 0.60 Cu max., 24.75-25.00; 13 alloy, 0.60 Cu max., 24.75-25.00; 195 alloy, 26.25-27.00; 108 alloy, 23.25-23.50. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.75; grade 2, 22.50; grade 3, 21.25; grade 4, 20.75.

Brass Ingot: Red brass No. 115, 30.25; tin bronze, No. 225, 41.25; No. 245, 35.00; high-leaded tin bronze, No. 305, 34.50; No. 1 yellow, No. 405, 24.75; manganese bronze, No. 421, 27.75.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.91, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.89, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 20,000-lb lots, 36.855; l.c.l., 37.48. Weatherproof, 20,000-lb lots, 37.42; l.c.l., 38.17.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $17.50 per cwt; pipe, full coils, $17.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheet and strip, $7.25-17.00; sheared mill plate, $5.25-10.00; wire, $5.75-10.00; forging billets, $3.55-5.75; hot-rolled and forged bars, $4.25-7.50.

(Prices per lb, c.l., f.o.b. mill.) Sheets, 26.00; ribbon zinc in coils, 21.50; plates, 20.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.90-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	138	120	138
Strip, C.R.	124	108	138
Plate, H.R.	130	110	126
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100, 3003 and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range Inches	Flat Sheet	Coiled Sheet
0.250-0.136	42.80-47.30	.....
0.136-0.096	43.20-48.30	.....
0.126-0.103	.....	39.20-39.80
0.096-0.077	43.80-50.00	39.30-40.00
0.077-0.068	44.30-52.20	.....
0.077-0.061	.....	39.50-40.70
0.068-0.061	44.30-52.20	.....
0.061-0.048	44.90-54.40	40.10-41.80
0.048-0.038	45.40-57.10	40.60-43.20
0.038-0.030	45.70-62.00	41.00-45.70
0.030-0.024	46.20-53.70	41.30-45.70
0.024-0.019	46.90-56.80	42.40-44.10
0.019-0.017	47.70-54.10	43.00-44.70
0.017-0.015	48.60-55.00	43.80-45.50
0.015-0.014	49.60	44.80-46.50
0.014-0.012	50.80	45.50
0.012-0.011	51.00	46.70
0.011-0.0095	53.50	48.10
0.0095-0.0085	54.60	49.60
0.0085-0.0075	56.20	50.80
0.0075-0.007	57.70	52.30
0.007-0.006	59.30	53.70

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in. 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.40	47.20
5050-F	43.50	48.30
3004-F	44.50	50.20
5052-F	45.10	50.90
6061-T6	45.60	51.70
2024-T4	49.30	56.10
7075-T6*	57.60	64.70

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats*	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
0.125	76.90	73.90	....	....
0.250	62.00	60.20	89.10	76.60
0.375	61.20	60.00	73.50	68.50
0.500	61.20	60.00	73.50	68.50
0.625	61.20	60.00	69.80	64.20
0.750	59.70	58.40	63.60	60.40
0.875	59.70	58.40	63.60	60.40
1.000	59.70	58.40	63.60	60.40
1.125	57.30	56.10	61.50	58.30
1.250	57.30	56.10	61.50	58.30
1.350	57.30	56.10	61.50	58.30
1.500	57.30	56.10	61.50	58.30
1.625	55.00	53.60	....	56.20
1.750	55.00	53.60	60.30	56.20
1.875	55.00	53.60	....	56.20
2.000	55.00	53.60	60.30	56.20
2.125	53.50	52.10	....	....
2.250	53.50	52.10	....	56.20
2.375	53.50	52.10	....	....
2.500	53.50	52.10	....	56.20
2.625	....	50.40	....	....
2.750	51.90	50.40	....	56.20
2.875	....	50.40	....	....
3.000	51.90	50.40	....	56.20
3.125	....	50.40	....	....
3.250	....	50.40	....	....
3.375	....	50.40	....	....

*Selected sizes.

Forging Stock: Round, Class 1, random lengths, diam., 0.375-8 in., "F" temper; 2014, 42.20-55.00; 6061, 41.60-55.00; 7075, 61.60-75.00; 7070, 66.60-80.00.

Pipe: ASA schedule 40, alloy 6063-T6 standard length, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: ⅜ in., 18.85; 1 in., 29.75; 1¼ in., 40.30; 1½ in., 48.15; 2 in., 58.30; 4 in., 160.20; 6 in., 287.55; 8 in., 432.70.

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	42.70-44.20	51.30-55.50
12-14	42.70-44.20	52.00-56.50
15-17	42.70-44.20	53.20-58.20
18-20	43.20-44.70	55.20-60.80

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grades, .032 in., 171.30; .081 in., 108.80; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.10; .25-.75 in., 70.60-71.60. Tooling plate, 0.25-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	65.30-67.60	84.60-87.40
12-14	65.30-67.60	85.70-88.00
24-26	66.10-75.30	90.60-91.30
36-38	66.10-75.30	104.20-105.30

NONFERROUS SCRAP

DEALERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 24.00-24.50; No. 2 heavy copper and wire, 22.00-22.50; light copper, 20.00-20.50; No. 1 composition red brass, 18.00-18.50; No. 1 com-

BRASS MILL PRICES

MILL PRODUCTS a

	Sheets, Strip, Plate	Rod	Wire	Seamless Tubes
Copper	55.63b	52.86c	....	55.82
Yellow Brass	48.24	32.73d	48.78	51.65
Low Brass, 80%	51.23	51.17	51.77	54.54
Red Brass, 85%	52.29	52.23	52.83	55.60
Com. Bronze, 90%	53.90	53.84	54.44	56.96
Manganese Bronze	56.54	50.14	60.62	....
Muntz Metal	50.85	46.16	....	....
Naval Brass	52.80	46.61	59.36	56.21
Silicon Bronze	60.67	59.86	60.21	78.35
Nickel Silver, 10%	63.82	66.15	66.15	....
Phos. Bronze	75.34	75.84	75.84	77.02

SCRAP ALLOWANCES e (Based on copper at 31.50c)

	Clean Heavy	Rod Ends	Clean Turnings
Copper	27.500	27.500	26.750
Yellow Brass	20.625	19.750	18.750
Low Brass, 80%	23.250	23.000	22.500
Red Brass, 85%	24.250	24.000	23.500
Com. Bronze, 90%	25.125	24.875	24.375
Manganese Bronze	19.125	18.875	18.375
Muntz Metal	19.375	19.125	18.625
Naval Brass	19.125	18.875	18.375
Silicon Bronze	27.000	26.750	26.000
Nickel Silver, 10%	25.500	25.250	12.625
Phos. Bronze	28.625	28.375	25.750

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

position turnings, 16.50-17.00; new brass clippings, 16.50-17.00; light brass, 11.50-12.00; heavy yellow brass, 12.50-13.00; new brass rod ends, 13.00-13.50; auto radiators, unsweated, 14.00-14.50; cocks and faucets, 14.00-14.50; brass pipe, 14.00-14.50.

Lead: Soft scrap lead, 7.75-8.25; battery plates, 2.75-3.00; linotype and stereotype, 9.25-9.75; electrotype, 7.75-8.25; mixed babbitt, 9.75-10.25.

Monel: Clippings, 30.00-32.00; old sheets, 26.00-28.00; turnings, 20.00-22.00; rods, 30.00-32.00.

Nickel: Sheets and clips, 52.00-54.00; rolled anodes, 52.00-54.00; turnings, 39.00-40.00; rod ends, 52.00-54.00.

Zinc: Old zinc, 3.25-3.50; new diecast scrap, 3.00-3.25; old diecast scrap, 1.75-2.00.

Aluminum: Old castings and sheets, 11.50-11.75; clean borings and turnings, 7.25-7.75; segregated low copper clips, 14.75-15.25; segregated high copper clips, 14.25-14.75; mixed low copper clips, 15.00-15.50; mixed high copper clips, 12.25-12.75.

(Cents per pound, Chicago)

Aluminum: Old castings and sheets, 12.25-12.75; clean borings and turnings, 10.00-10.50; segregated low copper clips, 17.25-17.75; segregated high copper clips, 16.25-16.75; mixed low copper clips, 16.50-17.00; mixed high copper clips, 15.75-16.25.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 11.50-11.75; clean borings and turnings, 10.50-11.00; segregated low copper clips, 15.75-16.25; segregated high copper clips, 14.75-15.25; mixed low copper clips, 15.25-15.75; mixed high copper clips, 14.25-14.75.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)
Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 57.50; light scrap, 52.50; turnings and borings, 37.50.

Copper and Brass: No. 1 heavy copper and wire, 26.25; No. 2 heavy copper and wire, 25.00; light copper, 22.75; refinery brass (60% copper) per dry copper content 25.25.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 26.25; No. 2 heavy copper and wire, 25.00; light copper, 22.75; No. 1 composition borings, 20.50; No. 1 composition solids, 21.00; heavy yellow brass solids, 15.00; yellow brass turnings, 14.00; radiators, 16.50.

PLATING MATERIAL

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.30.

Copper: Flat-rolled, 47.79; oval, 46.00, 5000-10,000 lb; electrodeposited, 40.50, 2000-5000 lb lots; cast, 43.00, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; wire, 27.00; No. 2 heavy copper and wire, 26.00; light copper, 23.75; refinery brass deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 123.50; 200-499 lb, 122.00; 500-999 lb, 121.50; 1000 lb or more, 121.00.

Zinc: Balls, 18.00; flat tops, 18.00; flats, 20.75; ovals, 20.00, ton lots.

CHEMICALS

Cadmium Oxide: $1.30 per lb in 100-lb drums.
Chromic Acid (flake): 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.

Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.00; 1000-19,900 lb, 61.90.

Copper Sulphate: 100-1900 lb, 15.30; 2000-5900 lb, 13.30; 6000-11,900 lb, 13.05; 12,000-22,900 lb, 12.80; 23,000 lb or more, 12.30.

Nickel Chloride: 100 lb, 45.00; 200 lb, 43.00; 300 lb, 42.00; 400-4900 lb, 40.00; 5000-9900 lb, 38.00; 10,000 lb or more, 37.00.

Nickel Sulphate: 5000-22,999 lb, 29.00; 23,000-39,990 lb, 28.50; 40,000 lb or more, 28.00.
Sodium Cyanide (Cyanobrik): 200 lb, 20.80; 400-800 lb, 19.80; 1000-19,800 lb, 18.80; 20,000 lb or more, 17.80.

Sodium Stannate: Less than 100 lb, 81.20; 100-600 lb, 71.70; 700-1900 lb, 69.00; 2000-9900 lb, 67.10; 10,000 lb or more, 65.80.

Stannous Chloride (Anhydrous): 25 lb, 156.80; 100 lb, 152.00; 400 lb, 149.50; 800-19,900 lb, 108.70; 20,000 lb or more, 102.60.

Stannous Sulphate: Less than 50 lb, 141.90; 50 lb, 111.90; 100-1900 lb, 109.90; 2000 lb or more, 107.90.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(*Concluded from Page 141*)

Despite the steady scrap consumption during April, steel mill stocks showed another increase, rising to 6,977,000 tons. Foundry stocks moved up to 1,300,000 tons.

Pig Iron . . .

Pig Iron Prices, Page 136

Although foundry operations will be off sharply next month due to mass vacations and hot weather, purchases of merchant iron this month are the most active so far this year. Demand for castings is heavier, and many foundries have been accumulating a little extra stock because of the possibility of a steel strike.

Most consumers appear to be adequately stocked for their requirements over the next several weeks, even if a strike curtails output.

Records for pig iron production were set in May by Republic Steel Corp.'s two blast furnaces at Birmingham and two at Gadsden, Ala.

Rails, Cars . . .

Track Material Prices, Page 134

Greenville Steel Car Co. will about double the work force at its Greenville (Pa.) Works as a result of a leasing agreement with the Pennsylvania Railroad on 1000 seventy-ton hoppercars. The plant employs 325.

The Pennsylvania lease runs 20 years, with the railroad having option rights to renew it for another ten. The cars will be ready for service by December, 1959.

The Pennsylvania Railroad has ordered 4000 seventy-ton hopper cars, to be built at the Johnstown, Pa., shops of Bethlehem Steel Co. at a cost of $40 million. The road has a leasing arrangement with an investing group. This deal completes its program for acquiring 23,500 freight cars through lease and purchase agreements.

The Southern Railway has placed an order for 48 freight diesel locomotives, 2400 hp each, with the Electro-Motive Div., General Motors Corp., La Grange, Ill. They will cost $12.7 million.

Structural Shapes . . .

Structural Shape Prices, Page 131

Although new awards are light, structural steel fabricating shops

FOR SALE

Large inventory of steel flat bar, plates and structurals, in A-1 condition, stored under cover, at mill prices.

Write or call
E. Wilmoth
NEW YORK SHIPBUILDING CORPORATION
Camden, New Jersey
Woodlawn 3-6700

STRUCTURAL STEEL SHOP
For Sale or Lease
In path of great industrial expansion, in California. 250-ton monthly fabricating capacity. Land, buildings, machinery, $105,000.
Reply Box 772, STEEL
Penton Bldg., Cleveland 13, Ohio

IF YOU OPERATE A FURNACE . . . . .
We will purchase your scrap linings, retorts, conveyors, muffles, racks, etc. Any item made of Nickle alloy.
Write, Wire or Call
Weinstein Co.,
610 W. 8th St.
Jamestown, N. Y.
Phone 61-154

ASSISTANT BLAST FURNACE SUPERINTENDENT
In a new steel plant, completely integrated.
Located in one of the Great Lake States.
Salary Open.
Send detailed resume to Box 771, STEEL, Penton Bldg., Cleveland 13, Ohio

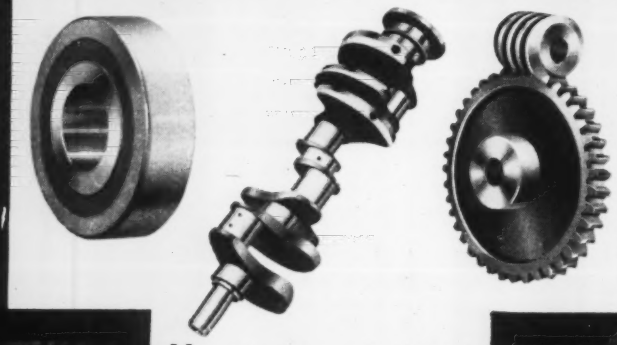
CLASSIFIED

MANUFACTURERS' REPRESENTATIVES WANTED
Well established manufacturers' representatives wanted with following. Production item used by steel producers, aluminum producers, aluminum and steel warehouses, stainless fabricators, polishers and all manufacturers using stainless steel and aluminum. Product recognized as the outstanding leader in field. Highest quality and most competitive price has eliminated all sales resistance and competition. Excellent commission. All territories now open. In reply give lines handled, years in business, number of salesmen, types of accounts called on, warehouse facilities and branch operations. Write Box 773, STEEL, Penton Bldg., Cleveland 13, Ohio.

Help Wanted

DIE JOB SHOP WORKING FOREMAN experienced sheet metal work. Confidential.
The Payne Tool & Engineering Co.
Springfield, Ohio

VALVOLINE
Tectyl
protects metals
against RUST



VALVOLINE'S amazing Tectyl rust preventives protect metal surfaces against *every kind of rust and corrosion* during storage and shipping.

Low-cost Tectyl compounds are easy to apply by brush, spray or dip and just as easy to remove. They protect metal surfaces against . . . sun and rain . . . heat and cold . . . salt air and salt water . . . humidity, perspiration and corrosive fumes.

Tectyl rust preventives meet exacting government specifications.

Write today for these two helpful Tectyl charts

1. "Valvoline Tectyl U. S. Government Approved Packaging and Preservative Chart." Gives the Army, Navy and Air Force "Specs" and applications.

2. "Valvoline Tectyl Industrial Rust Preventive Comparison Chart." Specifies applications covering the entire field.

VALVOLINE
Tectyl
ALL-METAL PROTECTION
RUST PREVENTIVES

VALVOLINE OIL COMPANY, Freedom, Pennsylvania
Division of Ashland Oil & Refining Company

hold substantial backlogs due to heavy buying earlier this year. Those not directly affected by a steel strike (should there be one at midyear) will be busy right through the summer, at least to the extent their steel supplies will permit.

Generally, fabricators' steel stocks appear sufficient to carry them for four to five weeks on the average. Should a prolonged steel strike be experienced they will be pinched sometime in August. Actually, fabricators and rail equipment builders are likely to be among the first consumers to feel the pinch of steel scarcity if a strike runs more than a few weeks.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

1200 tons, state bridgework, Sec. 9, Farmhurst, Del., through G. A. & F. C. Wagman, contractor, Dallastown, Pa., to an Arlington, Va., fabricator.

1200 tons, five bridges and ramp connections, Worcester, Mass., to West End Iron Works, Cambridge, Mass., through Balkett Co. Inc., Boston, general contractor.

500 tons or more, structural steel towers, U. S. Engineer, Seattle, delivered Baker, Oreg., Cottonwood, Idaho, and Tillamook, Oreg., to Isaacson Iron Works, Seattle, at $343,360.

500 tons or more, beams, naval shipyard, Philadelphia, to Caine Steel Co., Chicago, at $202,188, and Bethlehem Steel Co., Bethlehem, Pa., at $38,312.

360 tons, Idaho state highway bridge, Pocatello, to unstated interest; LaGrande-Johnson Co. is general contractor.

300 tons, Coca Cola bottling plant, North Brunswick, N. J., to Irvington Steel & Iron Works, New Brunswick, N. J.

212 tons, Montana state road bridge, Milk River, reported to American Bridge Div., U. S. Steel Corp., Pittsburgh; W. P. Roscoe Co., Helena, Mont., general contractor.

STRUCTURAL STEEL PENDING

2865 tons, railroad bridges, Chicago, Rock Island & Pacific Railroad, Calumet Sag Channel project, Blue Island Ill.; bids in.

1200 tons, approachwork, George Washington Bridge, New York, involving 500 tons for Sections 5 and 6, and 700 tons for Section 9; general contract awarded to Gull Contracting Co., Flushing, N. Y., on its bid of $1,992,760.

1135 tons, steel sheet piling, U. S. Engineer, Chicago; delivered Kewaunee, Ill.

1000 tons, gymnasium and athletic building, St. John's University, Queens, N. Y.; Coresto Contracting Co., Brooklyn, N. Y., awarded general contract.

600 tons, Montana state overpass, Helena; bids in.

475 tons, Port Reading grade crossing, Central Railroad of New Jersey, Woodbridge, N. J.; also 170 tons, reinforcing bars.

320 tons, high school, La Salle College, Montgomery County, Pa.; bids asked; 380 tons of reinforcing bars are also required.

212 tons, Montana state bridge, Milk River, general contract to W. P. Roscoe Co., Helena, Mont.

111 tons, state bridgework, Burlington, Conn., bids June 15.

REINFORCING BARS . . .

REINFORCING BARS PLACED

500 tons, state highway structures, Worcester, Mass., to Bethlehem Steel Co., Bethlehem, Pa., through Barletta Co. Inc., Boston, general contractor.

380 tons, group hospital, Seattle, to Northwest Steel Rolling Mills Inc., Seattle; Lloyd Johnson and Morrison-Knudsen Co., Seattle, joint contractors.

Advertising Index

Acheson Colloids Co., A Division of Acheson Industries, Inc. 68
Acimet Mfg. Co. 139
Acme-Newport Steel Co. 118
Acme Steel Co., Acme Steel Products Division 130
Acme Welding Division of The United Tool & Die Co. 60
Alan Wood Steel Co. 19
Allegheny Ludlum Steel Corporation 11
Allen-Bradley Co. 26
Allen Manufacturing Co. 104
Allis-Chalmers 120
American Air Filter Co., Inc. 24
American Brass Co., The 65
American Steel & Wire Division, United States Steel Corporation 150
Armco Steel Corporation 34
Ashland Oil & Refining Co., Valvoline Oil Co. Division 148

Babcock & Wilcox Co., The, Tubular Products Division ..... Inside Front Cover
Baldwin-Lima-Hamilton Corporation, Loewy-Hydropress Division 47
Bearings, Inc. 74
Bethlehem Steel Co. 1
Blaw-Knox Co., Blaw-Knox Equipment Division 139
Blaw-Knox Co., Foundry & Mill Machinery Division 117
Brown-Lipe-Chapin, Division of General Motors Corporation 28
Buell Engineering Co., Inc. 72
Bullard Co., The 145

Canton Manufacturing Co. 140
Carpenter Steel Co., The 14, 15
Cleveland Crane & Engineering Co., The 102
Colorado Fuel & Iron Corporation, The 17, 106, 107
Columbia-Geneva Steel Division, United States Steel Corporation 150
Commercial Shearing & Stamping Co. 2
Continental Steel Corporation 80
Coolidge Corporation 61
Cutler-Hammer, Inc. 96

Dixie Bearings, Inc. 74
Dreis & Krump Manufacturing Co. 10
Dun & Bradstreet, Inc., Directory Division 70, 71
Dykem Co., The 140

Electric Controller & Mfg. Co., The, A Division of The Square D Co. 76, 77
Eureka Fire Brick Works 141

Federal Bearings Co., Inc., The 23

General Electric Co. 12, 13
General Motors Corporation, Brown-Lipe-Chapin Division 28
General Motors Corporation, Hyatt Bearings Division 54
General Motors, New Departure Division 57
General Refractories Co. 73
General Steel Castings 25
Giddings & Lewis Machine Tool Co. 110, 111
Glidden Co., The, Industrial Paint Division .. 93
Goodyear Tire & Rubber Co., Inc., The, Industrial Products Division 4

Harper, H. M., Co., The 108, 109
Harrington & King Perforating Co., Inc., The 127
Hooker Chemical Corporation 126
Hyatt Bearings Division, General Motors Corporation 54

Jessop Steel Co. 67
Jones & Lamson Machine Co. 18
Jones & Laughlin Steel Corporation 82, 83

Kaiser Engineers Division of Henry J. Kaiser Co. 22
Keystone Steel & Wire Co. 27

Lodge & Shipley Co., The 81
Loewy-Hydropress Division, Baldwin-Lima-Hamilton Corporation 47
Logemann Brothers Co. 143

McKay Machine Co., The 20, 21

Magor Car Corporation 122
May-Fran Engineering, Inc. 78
Mundt, Charles, & Sons 125

National Acme Co., The 114, 115
National Steel Corporation 48
National Tube Division, United States Steel Corporation 150
New Departure, Division of General Motors 57
Niagara Machine & Tool Works 7

Ohio Steel Foundry Co., The 62
Olin Mathieson, Metals Division 50, 51
Owen Bucket Co., The 140

Peterson Steels, Inc. 75
Philadelphia Gear Corporation 84
Pittsburgh Steel Co., Thomas Strip Division 101
Porter, H. K., Company, Inc., Refractories Division 79

Republic Steel Corporation 8, 9
Roebling's, John A., Sons Corporation, A Subsidiary of The Colorado Fuel & Iron Corporation 17

Sandvik Steel, Inc. 3
Simonds Gear & Mfg. Co., The 16
Square D Co., The, The Electric Controller & Mfg. Co. Division 76, 77
Stamco, Inc. 124
Standard Oil Co. (Indiana) 95
Stuart, D. A., Oil Co., Ltd. 112, 113

Tempil Corporation 149
Tennessee Coal & Iron Division, United States Steel Corporation 150
Texaco, Inc. 103
Thomas Flexible Coupling Co. 123
Thomas Strip Division, Pittsburgh Steel Co. 101
Timken Roller Bearing Co., The 58
Torrington Co., The 33
Townsend Co. 116

United States Steel Corporation, Subsidiaries 150
United States Steel Export Co. 150
United States Steel Supply Division, United States Steel Corporation 150
United Tool & Die Co., The, Acme Welding Division 60
Universal Grinding Corporation 127

Valvoline Oil Co., Division of Ashland Oil & Refining Co. 148
Virginia Gear & Machine Corporation 84

Walsh Refractories Corporation 6
Ward Steel Co. 125
Wean Engineering Co., Inc., The .... Back Cover
Weinstein Co. 147
Weirton Steel Co. 48
Wheland Co., The 125
Wilson, Lee, Engineering Co., Inc. ..... Inside Back Cover
Wrought Washer Mfg. Co. 36

~ ~ ~

Table of Contents
Facing Inside Front Cover

Classified Advertising, Page 147

Tempilstik°

*temperature indicating crayons**

**Also Tempil° Pellets and Tempilaq° (liquid form)*

Tempilstik°—a simple and accurate means of determining preheating and stress relieving temperatures in welding operations. Widely used in all heat treating—as well as in hundreds of other heat-dependent processes in industry. Available in 80 different temperature ratings from 113°F to 2500°F . . . $2.00 each.

Send for *free* sample Tempil° Pellets. State temperature desired . . . Sorry, no sample Tempilstiks°

Most industrial and welding supply houses carry Tempilstiks° . . . if yours does not, write for information to:

PROMOTION DEPARTMENT

Tempil° CORPORATION
132 West 22nd St., New York 11, N. Y.

You get steel + plus from U. S. Steel

"I sold them a steel that cost more, so they could pay less,"
SAYS TOM HALLORAN, USS SALES REPRESENTATIVE, PITTSBURGH
"One of my customers, Elliott Company, made some of their turbine discs from a special alloy steel that had to be forged, cross-rolled, heat-treated and torch-cut to size *before* machining.
ROLL IT...
...AND PAT IT...
...AND MARK IT WITH "E"...
SEEMS TO ME THERE'S AN AWFUL LOT OF ACTIVITY AROUND HERE
"I visited the plant with a USS metallurgist who joined a team of Elliott engineers to study their operation, They found they could use USS "T-1" Steel, which is furnished to meet 100,000 PSI minimum yield strength in plate thicknesses up to 2½" inclusive. This eliminated *all* the pre-machining operations.
...AND PUT IT IN THE OVEN FOR ELLIOTT AND ME
USS and "T-1" are registered trademarks
"Elliott adopted "T-1" and, even though it cost a little more than the previous steel, it cut material costs 60%, because it saved work.
WHAT'S THIS... LUNCH HOUR, COFFEE BREAK OR A SIESTA?
NOPE... M' REGULAR SHIFT... WE GOT A NEW SYSTEM AROUND HERE
"Technical assistance in the selection and most economical uses of steel is only *one* of the U.S. Steel plus services."
When you buy from U. S. Steel you get steel plus technical assistance . . . research . . . facilities . . . marketing assistance
United States Steel Corporation—Pittsburgh
American Steel & Wire—Cleveland
National Tube—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company
USS
United States Steel

47th

LEE WILSON SINGLE STACK GOES "ON STREAM" AT McLOUTH

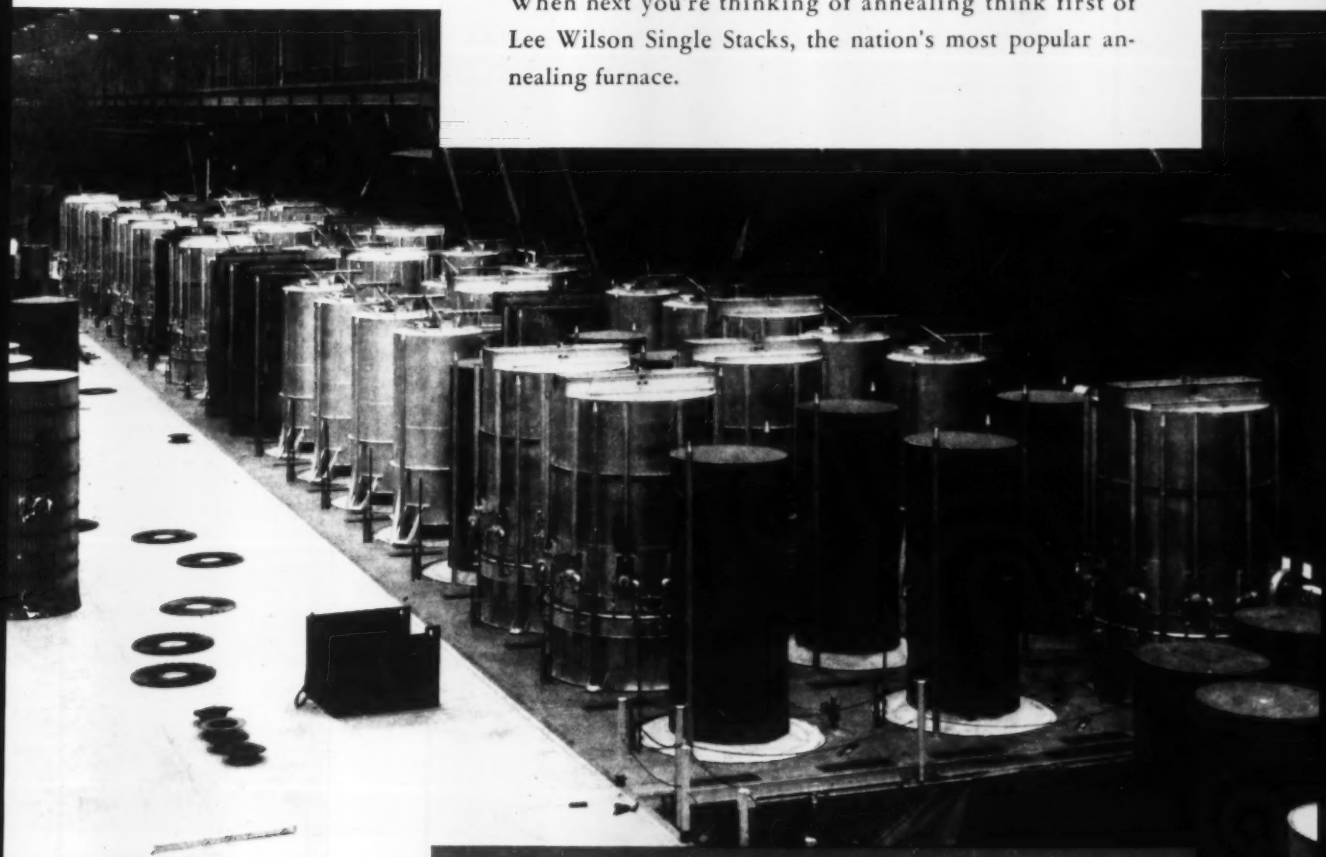
Progressive Producer Has Industry's Largest Single Stack Annealing Furnace Installation

When McLouth Steel recently put their 47th Lee Wilson Single Stack Furnace "on stream" they set into operation the industry's largest Single Stack operation.

But more important, this gives McLouth one of the most accurate, most versatile high production annealing departments in the world. For only Lee Wilson's exclusive "O" tube—high convection design distributes the heat with exacting uniformity. And, by heating the stacks individually, each charge can be individually controlled for greatest flexibility.

The installation, made over the past four years, is of 60″ diameter furnaces with 162″ piling heights.

When next you're thinking of annealing think first of Lee Wilson Single Stacks, the nation's most popular annealing furnace.

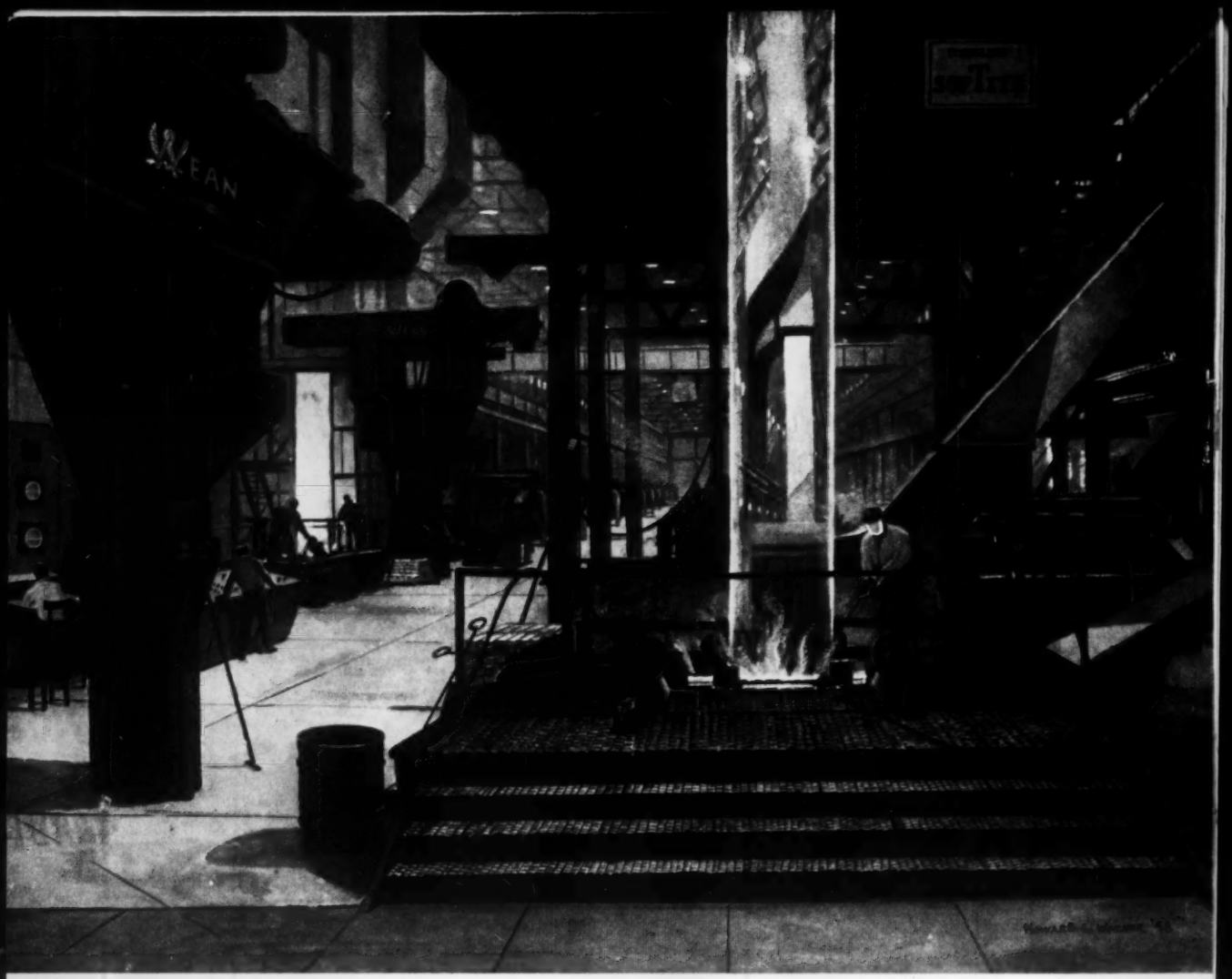


Lee Wilson® ENGINEERING COMPANY, INC.

HIGH PRODUCTION ANNEALING SYSTEMS

MAKE THE BEST METALS BETTER

* ORIGINATORS AND LEADING PRODUCERS OF OPENED COIL AND SINGLE STACK FURNACES



No. 1 and No. 2 Hot-Dip Galvanizing Lines, Martins Ferry Plant, Wheeling Steel Corporation

Wean, Wheeling and Galvanizing . . .

The advantages of corrosion-resistant, zinc-coated sheets might well have been lost to history had it not been for the development of continuous, hot-dip galvanizing lines. Such lines brought galvanized sheets within the rigid limitations of acceptable product and did so at much lower operating costs.

The Wean Engineering Company worked in close cooperation with the Wheeling Steel research department on the development, design, and construction of these lines at the Martins Ferry plant. The lines are currently producing a wide range of top quality galvanized sheets and coils at speeds up to 300 fpm.

Wean has designed and built galvanizing lines for a wide variety of customer requirements. Why not take advantage of Wean's *creative engineering* experience on your next coating line project.

THE WEAN ENGINEERING COMPANY, INC. · WARREN · OHIO